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ABSTRACT

A study compared the training activities of 15 community colleges in two California counties with job training programs offered by private industry (companies and industry-related organizations) in the same two counties. Twenty-four companies (of 94 identified) offering training programs in the areas of electronics/electrical technology and secretarial studies were studied. Data for the study were obtained from interviews conducted during site visits, catalogs, course lists, and other documents obtained from the colleges and companies. Three specific questions were addressed by the study. On question 1, the two major reasons given to explain why the companies studied offered courses instead of using community college programs were (1) so that companies could tailor training to their specific needs and (2) because the specific training required was unavailable from local community colleges. On question 2, the companies felt that doing more to determine exactly what industry's training needs are and making sure that curricula and training reflect these needs are the two most important steps that community colleges should take to help industry meet training needs. On question 3, a significant overlap between certain electronics/electrical technology courses offered by community colleges and companies was found; no significant overlap was found between secretarial studies courses offered by the companies and community colleges studied (with the exception of courses in word processing/automation). A majority of the community colleges surveyed did not have any cooperative arrangements to provide training in either secretarial or electronics/electrical technology skills to private companies, but about half the companies surveyed use some courses offered by outside training providers in addition to their own courses. The interview schedules, a literature review, and lists of participating colleges and companies are appended. (MN)

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A STUDY OF PRIVATE AND PUBLIC SECTOR VOCATIONAL TRAINING PROGRAMS IN CALIFORNIA

Prepared for the
California Community Colleges Statewide Occupational
Education Research and Evaluation Committee

and the

Vocational Education Division
Chancellor's Office
California Community Colleges
Sacramento, California

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California
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Colleges

PREFACE

There has been increasing interest and concern about possible duplication of vocational training done by public education and the private sector. This study was initiated to determine the extent of duplication as well as to identify the reasons why industry often conducts its own training rather than utilizing the available community college resources.

Although the study was limited to specific programs in only two geographic regions, the results identify common perceptions and reasons used to explain the duplication of training.

Recommendations made in this study should help the long range planning done by the community colleges and may initiate some increased cooperation with the private sector. It is intended that the California community colleges continue their increasing involvement and importance as a major contributing factor in the economic well-being and development of the State through partnerships with industry.

Vocational Education Unit
Chancellor's Office
California Community Colleges

EXECUTIVE SUMMARY

The purpose of this study was to develop a report comparing training activities of the public and private sector providers of vocational education and/or job training programs in selected areas of California. The study was conducted for and under the direction of the Statewide Occupational Education Research and Evaluation Committee. It was intended to be an exploratory study to find out what each sector is doing and whether there are unnecessary overlaps in training activities between the community colleges and business and industry.

The study addressed three specific questions identified by the statewide committee. They were: (a) Why does industry offer courses instead of utilizing community college programs? (b) What can community colleges do to help industry meet training needs? and (c) Is there a significant overlap between industry and community college programs?

Method

The study focused on two geographic regions in the state, Santa Clara County and Orange County. The public sector focus was limited to the 15 community colleges in the two counties. The study was also limited to programs offered by private industry (companies and industry-related organizations), excluding private sector schools (proprietary, private postsecondary, and independent nonprofit schools) and community based organizations.

The specific program areas studied were Electronics and Electrical Technology, and Secretarial Studies. A total of 94 companies and associations that possibly offered training in these areas were identified. Contact persons were telephoned to find out if the company offered formal in-house training in one or both fields other than on-the-job training. Those that did were asked to participate in the study, and all who were asked agreed. The contact process continued until the first 12 companies in each county agreed to participate.

The 24 companies and 15 community colleges were visited to obtain answers to questions on an interview schedule. Other information was available from catalogs, lists of courses, and other documents obtained from the colleges and the companies.

Conclusions

This section addresses the specific questions to be answered by the study and other conclusions.

Why Does Industry Offer Courses Instead of Utilizing Community College Programs?

Companies have a number of reasons for offering courses in electronics technology in-house. The two major reasons are that they can orient the training to their specific needs, and training is unavailable from community colleges. It may not be available from the colleges since the company developed the technology, it deals solely with their product line, or it is unique. The reasons small companies offer training differ somewhat from those for large companies.

The advantages to companies of offering courses in electronics technology in-house are similar but not identical to the reasons for doing so. The two major advantages for small companies are that the trainees learn 100% applicable information, and it is cost effective since the training staff is on salary. For large companies the two major advantages are that they can control the subject matter and convenience to employees.

The main reason both large and small companies offer courses in secretarial studies in-house is that they can orient the training to their specific needs and make training company specific. Another major reason for small companies is convenience to employees. Large companies have a number of unique reasons why they offer the courses in-house.

Control of the subject matter and convenience to employees are the main advantages to large companies of offering courses in secretarial studies. Control of the subject matter is also a major advantage for small companies, as are: employees receive company specific information, control over time frames and scheduling, control over attendance, and a number of unique advantages.

What Can Community Colleges Do to Help Industry Meet Training Needs?

The two major things that companies think community colleges should do to meet the electronics technology training needs of their company are to: do more to become aware of the industry needs, and make sure the curriculum and training reflects the needs of industry. There are also a number of things that community colleges can do that are unique to individual

companies. However, there are a number of companies whose staff believe that the colleges cannot meet their needs (e.g., the trainer needs specialized knowledge or the training is geared to specialized company products). There are also a number of companies whose staff believe the colleges are already doing what they can. Community college staff believe that the main thing they should do is to develop, strengthen, or make better use of advisory committees, which appears to be less action oriented than what company staff recommend. There are, however, a number of other things that the college staff believe they should do to help industry meet electronics technology training needs.

The main thing that both company and community college staff believe the community colleges should do to meet the secretarial training needs of companies is to become more aware of the needs. The next most important thing is to modify the curriculum. There are, however, some companies that believe the community colleges are already meeting the needs or they cannot duplicate what the company is doing. As with electronics technology, there are a number of other things that community college staff believe they should do to help industry meet secretarial training needs.

Is There a Significant Overlap Between Industry and Community College Programs?

There is a significant overlap between courses offered by community colleges and by companies in certain content areas, especially Fabrication and Assembly, DC Theory and Lab, and Electronic Systems Analysis. However, most company courses are much shorter than similar college courses and often cover only a portion of the college course content. Company courses are also often geared to their own product or process. Therefore, the overlap cannot be considered as a significant unnecessary overlap.

There is no significant overlap between secretarial studies courses offered by community colleges and companies except for the area of Word Processing/Office Automation. Even though there is some overlap in this area it is not considered a significant unnecessary overlap because most companies are oriented to the specific software or equipment used in their organizations. The only other areas in which companies offer a significant number of courses are personal and interpersonal development, and communication skills development. These courses are typically 2 to 12 hours long.

Community College Staff Perceptions

There are both similarities and differences between the reasons companies offer courses and the perceptions of community college staff as to why companies offer training. Some advantages to companies are not generally perceived by community college staff, such as trainees learn 100% applicable information. Also, there are some things perceived by community college staff as disadvantages that may not be (e.g. trainees do not receive college credit), and a few disadvantages that are not generally perceived by community college staff (e.g., training takes people away from their regular job).

Courses Offered and Duration

Most community colleges offer a wide range of electronics technology courses, while companies offer such courses in a very limited number of content areas. However, the depth of content covered by company courses in a given content area varies greatly. A typical electronics technology course offered by a company requires 6 to 36 contact hours, which is less than half the hours for a typical community college course.

Most community colleges also offer a wide range of secretarial studies courses. Company in-house courses are concentrated in the areas of word processing, human relations, and effective communication in writing and listening. A typical secretarial studies course offered by a company requires 2 to 12 contact hours, which is less than one-fourth the hours for a typical community college course.

Purposes of the Courses

The major purposes for community college programs in both electronics technology and secretarial studies are helping students for job entry, helping students for job maintenance, and helping students for job advancement. Helping employees for job maintenance and for job advancement are the main purposes for companies, with helping employees for job entry (including the retraining of current employees) being less important.

Number Served

For the companies and community colleges included in the study, the median number of people trained by the companies in a year in electronics technology is less than the median for the colleges, as might be expected. However, the total number of persons trained in a year by the 17 companies in the study is considerably greater than the number trained by the 14

community colleges. In secretarial studies the median number as well as the total number of people trained by the 14 companies in a year are less than the median and the total number for the 15 colleges.

Target Population

Companies do not usually offer their courses in either electronics technology or secretarial studies to the general public.

Instructional Delivery

Both the companies and the colleges use instructor lecture/laboratory as the major instructional method in both electronics technology and secretarial studies. In electronics technology, the companies use independent study and computer aided instruction more than the colleges, while the colleges use simulation more. However, the colleges use independent study and computer aided instruction more than the companies do in secretarial studies.

Little or no work experience is required as part of community college courses in either electronics technology or secretarial studies. A majority of company courses in electronics technology require on-the-job training as part of the course, and some courses in secretarial studies require it.

Most or all employees take electronics technology courses on company time, but many also take them on their own time. Almost all employees take secretarial studies courses on company time, but some also take them on their own time.

Most companies do not offer courses in either electronics technology or secretarial studies that require specialized equipment or facilities which cannot be made available outside the company. Most, but not all, in-house training is delivered by company staff.

Cost Considerations

About a quarter of the companies do not keep track of the cost of in-house training. Most of the companies that teach electronics technology and keep track of their training costs do not include the trainees' salary and benefits in their computations. However, most of the companies that teach secretarial studies and keep track of their training costs do include the trainees' salary and benefits. For a majority of the companies, cost is not considered an important factor in deciding whether an electronics technology course is offered in-house or whether a course offered by a community

college is utilized. However, for a majority of companies cost is considered an important factor in deciding whether a secretarial studies course is offered in-house.

Cooperative Efforts

A majority of the community colleges did not offer either electronics technology or secretarial studies courses during the last year to meet the needs of a specific company through contract education. A majority also did not have any other involvements or cooperative efforts with companies regarding their training in electronics technology, but about half had such involvements or efforts in the secretarial studies area.

Just about all companies utilize electronics technology courses offered by outside training providers or public sector institutions in addition to their own in-house courses. A majority of them use community college courses. A majority of companies utilize secretarial studies courses offered by outside providers, and about half of them use community college courses.

Whether One Segment is Doing Training the Other Could Do Better

In general, while community college administrators are equally divided about whether private industry is doing electronics technology training that community colleges could do better or more economically, a majority of the companies do not think that the colleges are doing training that private industry could do better. Community colleges do not generally think that private industry is doing secretarial studies training that the colleges could do better or more economically, and most companies do not think the colleges are doing training that private industry could do better.

The notion is held by some people in industry and education that there are unnecessary duplications among course offerings by companies and community colleges. This notion is not borne out by this study. The study shows that in electronics technology and secretarial studies, at least, a majority of the company in-house courses are designed either to teach employees a very narrow range of specific skills in a short time, or are specifically geared to their own company products or processes. There is not very much that colleges can do in this area.

However, there is an area where industry and college cooperation should be mutually beneficial. Many courses offered by companies and community

colleges in certain topic areas are very similar in purpose and content. Some examples are courses in Introduction to Electronics, Electronic Circuit Analysis, Human Relations, and Introduction to Word Processing. If the colleges communicate better with industry, modify their courses in the format desired by industry (e.g., shorter duration), and offer them at locations convenient to target employees, more companies will no doubt take advantage of college offerings.

Recommendations

The following recommendations are offered:

1. It is recommended that the California community colleges integrate the findings from this study into program planning.

2. It is recommended that each California community college: (a) conduct surveys to learn more about the training needs of industry in its service area; (b) take steps to assure that its curriculum and training reflect the needs of industry; and (c) place greater stress on the use of contract education as a method for helping private industry meet its training needs.

3. It is recommended that each California community college: (a) undertake activities to make private industry more aware of what the college can do to help industry with its training; (b) designate one contact point (person or office) that should be contacted by industry representatives for information and assistance; and (c) prepare and distribute to private industry documents that describe the college's capabilities and the contact point for the college.

4. It is recommended that private industry representatives who are responsible for employee training routinely consider the possibility of using community colleges as a source for employee training whenever such needs arise at their company. Each community college has a person who is responsible for occupational education programs at the college, who can be contacted for information and further assistance.

5. It is recommended that the Statewide Occupational Education Research and Evaluation Committee consider strategies for the implementation of the recommendations contained in this report.

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INTRODUCTION

Background

According to the Carnegie Foundation for the Advancement of Teaching, educational programs offered by business and industry have become a "booming industry" and an alternative, if not a threat, to traditional colleges and universities. In the report Corporate Classrooms: The Learning Business (Eurich, 1985), the foundation noted that corporations now teach everything from basic reading and mathematics skills to advanced technology and scientific subjects. The report estimated that nearly $60 billion a year is spent for corporate-run education, making it similar to the cost of the nation's public and private four-year colleges and universities.

Because of the increasing size and expanding scope of training programs run by business and industry, there is a need for California community college vocational educators to better understand the private sector training activities and a need to cooperate with or coordinate each other's activities when it is mutually beneficial. For instance, one of the California Community Colleges' vocational education goals and objectives for 1985-86 was to improve and expand linkages with the business and industry sector, employment and training agencies, and other providers of vocational education programs and services. As these linkages expand it becomes more and more apparent that both the public and private sectors in California need to know more about what the other party is doing, and need to cooperate with each other more fully.

There have, of course, been successful and cooperative ventures between the sectors. Many community colleges have programs that provide specific job training for local industry through the Job Training Partnership Act, the Employment Training Panel, or performance-based contracts. Berman, Weiler Associates (1985), in a study of California's community colleges prepared for the California Roundtable, found that in both job training programs and some broader vocational programs, a number of colleges had cooperative ventures with business and industry that were regarded by both the business and academic communities as productive and successful.

In spite of these cooperative efforts, however, evidence suggests that neither the public nor the private sector has a clear understanding of the total effort and activity of the other regarding vocational education

training programs. Even though the full implications of knowing about each other's involvement are unknown, it is clear that an understanding of each sector's vocational training activities could result in mutual economic benefits and efficiency. The need for accurate comparative information on the scope and nature of vocational training programs in the public and private sectors was recognized by the California Community Colleges Statewide Occupational Education Research and Evaluation Committee.

Purpose of the Study

The purpose of this study was to develop a report which describes and compares training activities of the public and private sector providers of vocational education and/or job training programs in selected geographical areas of California. The study was conducted by Educational Evaluation and Research, Inc., for and under the direction of the Statewide Occupational Education Research and Evaluation Committee. It was intended to find out what each sector is doing and whether there are unnecessary overlaps in training activities between the community colleges and business and industry.

A thorough and extensive comparison of public and private sector vocational education and training programs in California could not be made within the budget and time constraints of the study. It should, therefore, be looked upon as a first step that will identify problems and the feasibility of a larger or more comprehensive effort while at the same time producing initial results.

Although the study was primarily exploratory in nature, members of the statewide committee identified four specific questions to be addressed. They were: (a) Why does industry offer courses instead of utilizing community college programs? (b) What can community colleges do to help industry meet training needs? (c) Is there a significant overlap between industry and community college programs? and (d) Is there a significant cost difference between industry and community college training?

METHOD

The method for the study is presented in terms of its sampling design, data collection, and the analysis and synthesis of information. A literature review was also conducted for studies that compared the vocational training activities of the public and private sectors. It is presented in Appendix A.

Sampling Design

This section addresses the geographic regions and occupational programs selected for study.

Geographic Regions Studied

At its meeting in November 1986, the Statewide Occupational Education Research and Evaluation Committee decided that the study should focus on two or three geographic regions with data collected on industry and community college programs within them. Rather than selecting areas arbitrarily, Standard Metropolitan Statistical Areas (SMSA), which are based upon commute patterns and for which census and other data are available, were considered. The committee selected two SMSAs at its meeting in January 1987: the San Jose SMSA, consisting of Santa Clara County; and the Anaheim-Santa Ana SMSA, consisting of Orange County.

The committee decided to limit the public sector focus to community colleges only. The 15 community colleges in Santa Clara and Orange counties are listed in Appendix B. Also, the committee decided to limit the study to programs offered by private industry (companies and industry-related organizations), excluding private sector schools (proprietary, private postsecondary, and independent nonprofit schools) and community based organizations.

Occupational Programs Studied

The committee decided to: include both vocational education and job training programs; exclude programs teaching basic skills and apprenticeship programs; and limit the study to selected programs within the Business and Management and Engineering and Related Technologies areas. Community colleges had their largest 1983-84 enrollments in Business and Management (328,206), Engineering and Related Technologies (161,875), and Computer and Information Science (124,504).

The specific program areas to be studied were decided, in part, in terms of the predominant industries in the SMSAs selected. It was also realized that the questions to be addressed by the study will only be

answered for those program areas selected. In January the committee selected General Secretarial Studies and Electronics and Electrical Technology for study.

In 1983-84 the community college enrollment in Secretarial Studies was 98,395. Secretarial Studies covers study designed with a main emphasis on secretarial skills and techniques. Specific programs included are: Legal, Medical, Court Reporting, Administrative, Clerical (including Office Practice), Typing, and Word Processing. The enrollment in Electronics and Electrical Technology was 37,044. Electronics and Electrical Technology covers study of the theory and application of electrical and electronic systems and their components including circuits, electromagnetic fields, energy sources, computers, and other electrical and electronic components and devices. Specific programs included are: Electronic Communication, Industrial Electronics, Radio/Television, Electrical Power, Electrical Distribution, Computer Electronics, Electron Microscope, Laser Technology, and Electrical Maintenance.

Data Collection

This section addresses the development of data collection instruments and the collection of information.

Data Collection Instruments

A list of potential data elements to be collected from community colleges and companies was considered by the committee. The list and the questions to be addressed by the study were used to prepare draft interview schedules which were reviewed by the committee at a meeting held in April. Revised schedules were prepared and mailed to committee members for review and comment. After additional revision the interview schedules were pilot tested at a community college and a company, and a few refinements were made. The final Community College Interview Schedule is shown in Appendix C, the Private Sector Interview Schedule in Appendix D.

An attempt was made to keep the questions in the two interview schedules as comparable as possible. However, some questions were inappropriate for one sector or the other (e.g., "Do students have to travel to attend the community college classes?"). In addition, community colleges organize groups of courses into programs while companies typically do not. Companies had to be asked about courses, while the colleges had to be asked about

either courses or programs, depending upon the specific question.

During the development of the interview schedules it became apparent to the committee that it would be impossible to collect adequate and sufficient cost information within the constraints of the study. It was, therefore, not possible to address the fourth specific question that was to be addressed by the study: Is there a significant cost difference between industry and community college training? However, company respondents were asked a few questions related to costs.

Collection of Information

The identification of community colleges within the two counties was straightforward. A contact person was identified for each college. This was usually the administrator of occupational education. All of the 15 colleges offered courses in secretarial studies, and 14 offered courses in electronics technology.

The identification of private industry companies and organizations offering formal in-house training in electronics technology and/or secretarial studies was not as straightforward. Members of the committee were asked to identify companies that may offer such training, as were administrators of occupational education and others at community colleges and district offices. Appropriate business labor councils and other industry organizations and associations were also contacted. In addition, the 10 largest employers in each of the two counties were identified from business publications. A total of 94 companies and associations that possibly offered training in electronics technology or secretarial skills were identified.

As companies that may offer training in one or both of the two fields were identified, they were telephoned to obtain the name of an appropriate contact person if such a name was not already available. The 10 largest employers in each county were also telephoned. A total of 73 companies were contacted. Sometimes many calls had to be made to the same company to identify the correct person or persons. The contact persons were then telephoned to find out if the company offered formal in-house training in one or both fields other than on-the-job training. Formal training was defined as training organized into courses or topics for which there are written course outlines or objectives. Those that did offer formal in-house training were told about the study and asked if they were willing to

participate. All of those asked agreed. The contact process continued until the first 12 companies in each county agreed to participate. The 24 companies are listed in Appendix E. Seven of them offered formal in-house training in both electronics technology and secretarial skills. Ten offered training in just electronics technology, while seven offered it only in secretarial skills. In two cases the company had multiple facilities in one of the target counties but the training facility was located in an adjacent county.

The 24 companies and the 15 community colleges were visited to obtain answers to the questions on the interview schedule. The schedule was mailed to the contact persons ahead of time so they knew the specific questions to be asked. A total of 37 company representatives were interviewed. Eight percent of these were vice presidents, 41% managers or directors, 46% specialists, coordinators, or administrators, and 5% training instructors. For the community colleges 22 people were interviewed, including the administrator of occupational education at each college.

Analysis and Synthesis of Information

Information was available not just from the interview schedules but also from catalogs, lists of courses, and other documents obtained from the colleges and the companies. The information was analyzed and synthesized in preparation for the drafting of this report. For analysis and reporting purposes the companies were identified as either "large" or "small." A large company was defined as one with more than 2,000 employees at the location of the training site, or one for which the training site served over 2,000 company employees in the target county. For electronics technology there were seven small and 10 large companies, while for secretarial skills there were five small and nine large.

Whenever possible, qualitative information (such as responses to open-ended questions) was reduced to quantitative form to facilitate analyses. For such items, a content analysis was first made in order to establish the themes or categories to be used for reorganizing the information. For each identified theme frequency counts were then made and percentages computed. Tables in the results section below present themes identified from two or more respondents so that the variety of answers can be shown. Accordingly, the fact that something is not mentioned as a theme does not mean that no one mentioned it.

RESULTS

The results of the study are presented in two major sections: electronics technology, and secretarial studies.

Electronics Technology

Results for electronics technology are organized into 11 subsections. They are: why companies offer courses in-house, courses offered and duration, purposes of the courses, duration of training, number served, target population, instructional delivery, cost considerations, cooperative efforts, whether one segment is doing training the other could do better, and what community colleges should do to help meet training needs. When possible, community college and company results are compared.

Why Companies Offer Courses In-House

Why companies offer courses in electronics technology in-house is considered in terms of the reasons, advantages, disadvantages, and familiarity with community college programs.

Reasons companies offer courses in-house. Community college respondents were asked what they think the reasons are for private companies offering courses in electronics technology in-house, instead of or in addition to utilizing community college courses. Similarly, the private sector respondents were asked the reasons their company offers courses in electronics technology in-house, instead of or in addition to using public sector courses. The results for the community colleges are shown in Table 1. A total of 11 themes were identified from the responses, as seen in the table. The fact that there were so many themes reflects the wide range of reasons reported. The theme most frequently mentioned (by 93% of the community college respondents) was that companies can control the subject matter, customize, orient the training to their specific needs, and make training job specific. Fifty-seven percent noted that the reasons companies offer courses is that they have qualified experts in-house or have specially trained technically up-to-date staff community colleges don't have. The other themes, each mentioned by two or more respondents, may be seen in the table.

Table 1

Community College Perceptions
of Reasons Companies Offer Courses in Electronics Technology In-House

Reason	Percent of Colleges (N=14)
Can control the subject matter, customize, orient to their specific needs, make training job specific	93
They have qualified experts in-house, specially trained technically up-to-date staff community colleges do not have	57
Community colleges unable to respond quickly enough to private sector needs, hard to work with (bureaucracy)	43
May lack awareness of community college capabilities, what is offered and available	43
They can control who goes in the course; need for security; train smaller groups that community colleges can	43
They can control the length of training, have short-term intensive training	29
They need to train on a schedule different from community colleges, have flexible start-up time	29
Community college courses not oriented enough to what private sector does, community colleges not concerned enough about applications	21
They do not want to go through red tape, reporting and regulations	21
They have equipment hard for community colleges to get or purchase	14
Convenience to employees	14
Other reasons (each mentioned by one respondent)	29

Table 2 shows the reasons the company respondents gave for offering courses in electronics technology in-house. Nine themes were identified, reflecting a number of different reasons. The theme most frequently mentioned (by 71% of all the company respondents) was that they can control the subject matter, customize, orient to their specific needs, or make training job specific and not generic. It was mentioned more frequently by respondents at large companies (90%) than by those at small companies (43%). The second most frequently mentioned theme (59%) was that the training is unavailable from community colleges, is not offered outside since the company developed the technology, deals solely with their product line, or is unique. It was mentioned more often by respondents from small companies (86%) than from large (40%).

The remaining major themes, which show some differences between small and large companies, may be seen in Table 2. For example, none of the respondents from small companies said that they want employees trained in the least amount of time that they can, although 40% of the large company respondents mentioned this theme as a reason. Also, 43% of the small but none of the large company respondents mentioned that the training is cost effective rather than paying an outside group.

Table 2

Reasons Companies Offer Courses in Electronics Technology In-House

Reason	Percent of Companies		
	Small (N=7)	Large (N=10)	All (N=17)
Can control the subject matter, customize, orient to their specific needs, make training job specific (not generic)	43	90	71
Training is unavailable from community colleges, not offered outside since they developed the technology, deals solely with their product line, unique	86	40	59
Convenience to employees, fits their work schedule, saves their travel time	29	40	35
Want employees trained in the least amount of time they can, duration of training	0	40	24
They have subject matter experts available on staff, cannot find outside people to teach the skills	29	20	24
The public sector cannot provide the latest equipment and/or facilities to do the training	14	20	18
It is cost effective rather than paying outside private groups	43	0	18
They are contractually required to do the training	0	20	12
The quality of training is higher in-house	0	20	12
Other reasons (each mentioned by one respondent)	29	50	41

A comparison of Tables 1 and 2 reveals the differences between community college perceptions of the reasons why companies offer in-house courses in electronics technology and the reasons mentioned by the private sector respondents. The theme most frequently mentioned by both groups was that they can control the subject matter, customize, orient to their specific needs, and make training job specific. Other themes mentioned by both

groups of respondents were: controlling the length of training or training in the least amount of time; they have experts available on staff; the companies have the equipment that the public sector cannot provide; community college courses are not oriented enough to what the private sector does or training is unavailable from the colleges; and convenience to employees. Themes mentioned by community college respondents only were: community colleges are unable to respond quickly enough to private sector needs; companies may lack awareness of college capabilities; companies can control who goes in the training; companies need to train on a schedule different from community colleges; and companies don't want to go through red tape, reporting, and regulations. Conversely, themes mentioned by the company respondents only were: is cost effective rather that paying outside private groups; they are contractually required to do training; and the quality of training is higher in-house.

Advantages of offering courses in-house. The community college respondents were asked what they think are the advantages to companies of offering their own courses in electronics technology in-house. Also, the private sector respondents were asked the advantages of offering the courses

Table 3

Community College Perceptions of Advantages to Companies of Offering Courses in Electronics Technology In-House

Advantage	Percent of Colleges (N=14)
Can control what employees are learning, customize, orient it to their specific needs, do company specific training	100
They can control scheduling, schedule it when they want to	36
Convenience to employees, get training during work time	29
Costs less to train using own employees, costs immediately reimbursed	29
Can control who gets in the course, train smaller groups than community colleges can	21
They already have the equipment they want people trained on	14
They have the expertise and expert information needed, have specially trained staff community colleges don't have	14
Other advantages (each mentioned by one respondent)	50

in-house. Table 3 shows the themes identified from the advantages mentioned by community college respondents. All of them mentioned that the companies can control what the employees are learning, customize, orient the training to their specific needs, or do company specific training. The second most frequently mentioned theme was that companies can control scheduling or schedule training when they want. This was mentioned by 36% of the respondents. The remaining themes can be seen in Table 3.

Table 4 shows the themes from asking the private sector respondents the advantages to companies of offering their own courses in electronics technology in-house. The most frequently mentioned of the 10 themes identified was that they can control the subject matter, customize, or make the

Table 4

Advantages of Companies Offering Courses
in Electronics Technology In-House

Advantage	Percent of Companies		
	Small (N=7)	Large (N=10)	All (N=17)
Can control the subject matter, customize, make training job specific (not generic)	29	70	53
Convenience to employees, less travel time, training can be done on company time	14	60	41
Is cost effective since training staff on salary	43	20	29
Trainees learn 100% applicable information, company assured they learn the right methods, learn with equipment will actually use	57	10	29
Easier to schedule courses than for community colleges, can give when needed	14	30	24
Employees are trained in the least amount of time possible	0	30	18
They have expert faculty available, personnel to teach the course on staff	14	20	18
They have control over attendance and who gets the training	0	20	12
Can monitor the employees being trained, level of attention they get	14	10	12
Have necessary equipment available, have everything needed right there	14	10	12
Other advantages (each mentioned by one respondent)	14	40	24

training job specific rather than generic. It was mentioned by 53% of all the company respondents but more by those from large companies (70%) than by those from small (29%). The second most frequent theme was convenience to employees, less travel time, training can be done on company time. It was reported by 41% of the respondents, but more from large companies (60%) than from small (14%).

Eight other major themes are shown in Table 4, again reflecting a large range in the answers given by respondents. Other differences between respondents from small and large companies can be seen. For example, 57% of the respondents from small companies noted that trainees learn 100% applicable information, the company is assured that they learn the right methods, or they learn with equipment they will actually use. This theme was mentioned by only 10% of the large company respondents (one person).

Differences in community college perceptions of the advantages to companies of offering their own in-house courses in electronics technology and the advantages mentioned by private sector respondents may be seen by comparing Table 3 with Table 4. The theme most frequently mentioned by both groups was that they can control the subject matter, customize, or make the training job specific. All of the themes determined from community college responses generally were also identified from private sector respondents. However, there were three more unique to the companies. They were: employees are trained in the least amount of time possible; trainees learn 100% applicable information, the company is assured they learn the right methods, or they learn with equipment they will actually use; and they can monitor the employees being trained or the level of attention they get.

Disadvantages of offering courses in-house. Community college and private sector respondents were also asked the disadvantages of companies offering courses in electronics technology in-house. Five themes were identified from community college responses, as shown in Table 5. Most frequently mentioned (by 64%) was that sometimes companies don't have instructors with sufficient training, background, expertise, or ability to teach. Two additional themes were each mentioned by 57% of the respondents. One was that trainees do not receive college credit, the other that it costs money to hire someone or use one's own employees to teach. The other two themes are shown in the table.

Table 5

Community College Perceptions of Disadvantages to Companies of Offering Courses in Electronics Technology In-House

Disadvantage	Percent of Colleges (N=14)
Sometimes don't have instructors with sufficient training, expertise, background, ability to teach	64
Trainees do not receive college credit, transcript	57
Costs money to hire someone or use own employees to teach	57
Cannot offer breadth of training a community college can, student misses theory and background, training too narrow in application	50
Sometimes don't have training equipment	21
Other disadvantages (each mentioned by one respondent)	36

The disadvantages of offering courses in electronics technology in-house that were mentioned by company respondents are summarized in Table 6. The most frequently mentioned theme was cost, it is expensive, or have to supply in-house trainers. It was noted by 65% of the respondents, but more by those from small companies (86%) than from large (50%). A theme mentioned by 35% of the company respondents was they may not have in-house

Table 6

Disadvantages of Companies Offering Courses in Electronics Technology In-House

Disadvantage	Percent of Companies		
	Small (N=7)	Large (N=10)	All (N=17)
Cost; is expensive, have to supply in-house trainers	86	50	65
May not have in-house trainers with the expertise, have to train trainers, keep qualified staff	57	20	35
Takes trainees and trainers away from their regular job	43	0	18
Employees will not attend if have work priorities	0	20	12
Employees cannot get as broad a training as at community colleges, don't get different experiences	14	10	12
Other disadvantages (each mentioned by one respondent)	43	50	47

trainers with the expertise, they have to train trainers, or they have to keep qualified staff. It was also mentioned by a greater percentage of the respondents from small companies (57%) than those from large (20%).

Three other themes were mentioned, as shown in the table. One of them was mentioned by 43% of the respondents from small companies but none of those from large companies. It was that training takes people away from their regular job. The fact that a relatively large number of other disadvantages were mentioned by one respondent each is reflected by the relatively large percentages in the "Other disadvantages" row of the table.

Three themes were identified from both the company and the community college responses. They were: costs; the companies may not have instructors with sufficient training; and the companies cannot offer the breadth of training a community college can. Two themes identified from community college responses only were that trainees do not receive college credit, and companies sometimes don't have training equipment. Two themes found only for the private sector respondents were: it takes people away from their regular job, and employees will not attend if they have work priorities.

Company familiarity with community college programs. The company representatives were asked if they were generally familiar with electronics technology courses offered at local community colleges. All replied that they were. About a quarter of them said that they looked at college catalogs and schedules. One respondent mentioned that some courses are not state of the art, another said community college courses were OK but industry needs shorter, intensive courses, while a third commented that overall the courses were pretty good.

Courses Offered and Duration

Information on electronics technology course titles and instructional contact hours was obtained from the most recent college catalogs and from company course descriptions as well as from the training coordinators during the site visits. Because of the great diversity in course titles and contents, it was necessary to classify the course offerings into a reasonable number of content categories in order to summarize the information. Table 7 presents the results for community colleges using 18 content categories.

Ten or more colleges (70%) offered courses in nine content areas: Communication I and Lab, Digital Circuits, Fabrication and Assembly, DC Theory

Table 7

Content and Length of Electronics Technology Courses Offered by Community Colleges

Course Content	% of Colleges Offering Courses (N=14)	No. of Courses for a College	Range of Semester Units[a]	Median Units[a]
Introduction to Electronics/Electricity	71	1-3	3-6	3
Fabrication and Assembly	79	1-2	2-5	3
DC Theory and Lab	79	1-4	1-4	3
AC Theory and Lab	71	1-2	1-4	3
Electronics Math I/Number Skills	71	1	2-4	3
Electronics Math II	50	1	3-3	3
Electronic Circuit Analysis I and Lab	71	1-3	2-5	4
Electronic Circuit Analysis II and Lab	64	1-2	3-4	3
Electronic Systems Analysis and Lab	71	1-2	2-4	3
Communications I and Lab	93	1-5	1-4	3
Communications II and Lab	57	1-4	3-4	4
Digital Circuits	93	1-2	2-5	3
Microprocessor Architecture	64	1-2	3-4	3
Industrial Electricity/Electronics	50	1-2	2-4	3
Laser Theory	7	4	3-4	4
Manufacturing Processes	0	-	-	-
Telecommunications	43	1-4	3-4	3
Computer Maintenance	21	1	4-4	4

[a]The range and median for semester units shown are for individual courses, not for all courses combined under a given content.

and Lab, Introduction to Electronics/Electricity, AC Theory and Lab, Electronics Math I, Electronic Circuit Analysis I and Lab, and Electronic Systems Analysis and Lab. This indicates that most colleges offer a wide range of electronics technology courses. Also shown in the table are the number of courses offered in a given content area by individual colleges, and the range of semester units for individual courses. This information on the number of courses and the range of units should be interpreted cautiously because they are largely dependent upon how each college organizes its

courses. For example, one college may offer a 3-unit DC Theory course and a 1-unit DC Laboratory course while another college may offer a 4-unit DC Theory and Laboratory combined course. Thus, the numbers look different for the two colleges but the course offerings and durations are essentially the same at the two campuses. The median semester units for each of the 18 content areas shown in the table indicate that a typical electronics technology course offered by community colleges requires 54 or 72 instructional hours (3 or 4 semester units).

Table 8 presents the course offerings and contact hours for companies. For comparison purposes, the same 18 content categories used for community college courses are also used for company courses. The courses offered by three of the 17 companies are not included in the table, because they are not considered "electronics" courses by community colleges, even though companies reported them as electronics courses (e.g., computer programming).

As Table 8 shows, Fabrication and Assembly was the only content area in which a majority of companies (64%) offered one or more courses. It is obvious that the companies offer electronics technology courses in a very limited number of content areas and not in a wide range of areas as a typical community college does. Also, the wide range of contact hours indicates that the depth of course content covered by company courses in a given area varies greatly. For instance, introductory electronic courses range from a 2-hour survey of electronics for nontechnicians to an 84-hour coverage of the basics of DC and AC circuits for electronic technicians. The median contact hours for each of the 18 content areas indicate that a typical electronic technology course offered by a company requires six to 36 hours, which is less than half of the instructional hours for community college courses.

Purposes of the Courses

Community college respondents were asked the purposes of the electronics technology program offered at the college, while representatives of the companies were asked the purposes of their in-house courses. All community college respondents said that one of the purposes was helping students for job entry. Helping students for job maintenance was a purpose for 93%, while helping students for job advancement was reported by 86%. Other purposes, each mentioned by 14% of the respondents, were: to prepare students to transfer to a four-year technical program, exploration of general

knowledge about the field, and career change. (These percentages sum to more than 100 since respondents mentioned more than one purpose.)

Table 8

Content and Length of Electronics Technology Courses Offered by Companies

Course Content	% of Companies Offering Courses (N=14)[a]	No. of Courses for a Company	Range of Contact Hours[b]	Median Contact Hours[b]
Introduction to Electronics/Electricity	21	1-2	2-84	32
Fabrication and Assembly	64	1-11	2-40	12
DC Theory and Lab	36	1	4-36	20
AC Theory and Lab	21	1	16-24	20
Electronics Math I/Number Skills	7	1	10-10	10
Electronics Math II	14	1	20-20	20
Electronic Circuit Analysis I and Lab	0	-	-	-
Electronic Circuit Analysis II and Lab	14	1	V[c]	V[c]
Electronic Systems Analysis and Lab	43	1-3	4-21	18
Communications I and Lab	0	-	-	-
Communications II and Lab	14	1	16-36	26
Digital Circuits	14	1	V	V
Microprocessor Architecture	7	3	V	V
Industrial Electricity/Electronics	14	1	V	V
Laser Theory	14	1-4	12-60	36
Manufacturing Processes	29	1-7	3-12	6
Telecommunications	21	1-57	16-36	24
Computer Maintenance	7	3	10-40	24

[a]The courses offered by three of the 17 companies are not included in this analysis because of the following reasons: Company A - All 11 courses for its employees are community college courses; Company B - All 159 courses are in the use of computers and computer programming; Company C - All 15 courses offered are in the use of its own computer system.

[b]The range and median contact hours shown are for individual courses, not for all courses combined under a given content.

[c]Instructional hours vary depending upon individual ability and needs.

For the companies, helping employees for job entry (including the retraining of current employees) was mentioned by 71% of the respondents. Helping employees for job maintenance was mentioned by 88%, as was helping employees for job advancement. Job advancement was mentioned by all of the large companies but only by 71% of the small companies. Another purpose mentioned by 29% of the small companies but none of the large was the improvement of performance or skill improvement.

Duration of Training

Community college administrators were asked approximately how many hours are required to complete the electronics technology program. The question was difficult to answer and the answers were difficult to analyze. Community college people usually think in terms of semester or quarter units, different values are used for the length of a semester, and the number of instructional hours a unit represents may vary depending upon the distribution of hours between lecture and laboratory. In addition, most community colleges have several options within the electronics technology program. The question was asked, however, to try to obtain a value that companies could also report, and they do not work within the unit/semester system.

The number of semester units in the electronics technology programs (excluding degree programs) appeared to range from 14 to 48 over the 14 community colleges. The number of instructional hours ranged from 252 to 828. The average number of instructional hours at a college (the average of the shortest and longest options) ranged from 390 to 720. For the 10 colleges that had more than one program option, the difference between the number of instructional hours of the shortest and the longest options ranged from 32 to 500 with a mean of 265.

The respondents at the companies were asked the approximate number of instructional hours a typical trainee spends in in-house electronics technology courses, and the time interval. For 18% of the companies (3 of them) training appeared to be continuous as needed. For one of these the number of instructional hours was not known since the study is individualized. For the other two the number of instructional hours was 40 to 60 per year and 2 to 6 per month.

Considering the other 82% of the companies where training did not appear to be continuous, the median number of instructional hours was 40 (50

for the large companies and 25 for the small). The range for the small companies was 15 to 84 hours, with half of them in the interval 15 to 30 hours. The range for the large companies was 21 to 1,872 hours, with half of them in the interval 31 to 60 hours. The training time interval ranged from a week to 28 weeks for the small companies, with a third of them in the interval 24 weeks to 28 weeks. (For another third the time was variable or unknown since they used independent or self-paced study.) The time interval for the large companies ranged from a week to 6.5 years, with half of them in the interval of a month to three months. The most intensive training for the small companies was 25 hours over a week, the least intensive 2 to 6 hours in a month. For the large companies the most intensive training was 40 hours over a week, the least 40 to 60 hours over a year.

As might have been anticipated, company training had considerably fewer instructional hours than community college training in electronics technology. The shortest community college program was 252 instructional hours. The longest company program (excluding one electronics technician program that requires 1,872 hours over 6.5 years in cooperation with a community college) was 120 hours. Also, only 14% of the company programs had a time interval over 28 weeks.

Number Served

To obtain information about the number of individuals served, community college respondents were asked approximately how many persons were enrolled in the electronics technology program in the last year. Half reported unduplicated counts (i.e., an individual is counted once regardless of the number of courses taken), while half reported duplicated counts (where an individual may be counted more than once). For those reporting unduplicated counts, the number of persons enrolled ranged from 28 to 1,300 with a median of 734. The range was 90 to 1,000 with a median of 562 for those reporting duplicated counts.

The company representatives were asked approximately how many persons were trained in electronics technology in-house during the past 12 months. All small companies gave unduplicated counts, which ranged from 17 to 1,500 persons with a median of 80. Sixty percent of the large companies also reported unduplicated counts. They ranged from 20 to 15,000 with a median of 295 persons trained. For the 40% of large companies that gave duplicated

counts, the range was 234 to 2,000 with a median of 550. As might be expected, for the companies and colleges included in the study, the median number of persons trained at small companies was less than the median for large companies, while the median for the large companies was less than the median for the colleges. However, the total number of persons trained by the 17 companies in the study was considerably greater than the number trained by the 14 community colleges.

Target Population

The company respondents were asked two questions to provide some information about who they trained. The first question was about the percentage of course enrollees that took the courses on a voluntary basis, and the percentage that took them because they were required or recommended. For the small companies, the means were 31% voluntary, 4% recommended, and 64% required. The corresponding values for the large companies were 19%, 11%, and 70%, respectively. The values for individual companies ranged from 100% voluntary to 100% required.

The second question was whether the courses offered in electronics technology are open to people other than company employees. Half of the respondents from large companies said "Yes." Sometimes they offered courses to employees of other companies in the same business, or to some vendors or customers, but not to the general public. Other comments by those who said "Yes" were: they train the people of their subcontractors, sometimes nonemployees ask for training, and they train nonemployees for potential employment. Considering the small companies, 29% of the respondents said the courses are open to people other than their employees, 71% said they were not, and 14% reported that they are open to other groups in the corporation but not the general public. Comments made were: they are open but no one else took them, they train the staff of their customers, and they are not open to others so far.

Instructional Delivery

This section considers selected aspects of instructional delivery. They are the major instructional methods used, work experience and on-the-job training, the need to travel to the training site, training on company time, the need for specialized equipment or facilities, and who delivers the instruction.

Major instructional methods used. Both community college and company respondents were asked the major instructional methods used. As expected, 100% of the community colleges used instructor lecture/laboratory. Twenty-nine percent used independent study, including programmed instruction, 36% used computer aided instruction, and 57% employed simulation or the use of simulators. In addition, 14% used work experience/internships or work related assignments.

The major instructional methods used by the companies were instructor lecture/laboratory (88%), independent study (47%), computer aided instruction (59%), simulation (29%), and other methods (24%). The other methods included videotape training, the use of audiovisual aids, structured on-the-job training, and on-the-job application. The large companies used computer aided instruction and simulation more than the small companies did (70% vs. 43% and 50% vs. 14%, respectively). The companies used independent study and computer aided instruction more than the colleges did, while the colleges used simulation more.

Work experience and on-the-job training. College staff reported the percentage of the courses in electronics technology that require work experience as part of the course. All of the answers fell in the interval 0 to 20%. The companies reported the percentage of the courses that require on-the-job training as part of the course. The replies ranged from 0 to 100%. Twenty-nine percent of the answers were in the interval 81 to 100%, 18% in the interval 61 to 80%, 12% in the interval 21 to 40%, and 41% in the interval 0 to 20%. Small companies tended to require more on-the-job training as part of the courses than the large companies did.

Need to travel to the training site. With a few exceptions, community college students have to travel to the training site. Eighty-two percent of the companies (including all of the small companies) said that the employees did not have to travel to places other than their workplace to get the training. "Workplace" was defined as the company's local facility. Employees did have to travel for 30% of the large companies. For one of these companies employees had to travel an average of 30 miles, for another they had to travel to a community college where the classes were taught, and for the third employees may come from anywhere around the country.

Training on company time. At 88% of the companies studied employees took courses in electronics technology on company time during their regular work hours. At 47% they took courses on company time but other than their regular working hours, while at 41% they took courses on their own time. (The sum of these percents exceeds 100 since some companies have different kinds of training programs offered at different times.) Employees took courses on company time during their regular working hours at all of the large companies in the study but at only 71% of the small companies. Similarly, they took courses on company time but other than their regular working hours at 60% of the large but only 29% of the small companies. Employees took courses on their own time at 30% of the large companies and at 57% of the small.

Need for specialized equipment or facilities. One reason that companies may offer courses in electronics technology is that the courses require specialized equipment or facilities which cannot be made available outside the company. Eighteen percent of the companies said such equipment or facilities were required in 81 to 100% of the courses, 12% that they were required in 41 to 60% of the courses. For the remaining 70% they were required in less than 20% of the courses (and for most of the 70% specialized equipment or facilities were not required at all). The responses for small companies were generally the same as those for large companies.

Who delivers the instruction. A question asked of private sector representatives that was not appropriate for the community colleges was: "Who delivers the instruction for the in-house training in electronics technology?" It was delivered by company staff at 88% of the companies. At 29% it was delivered by vendors and at 24% by community college staff. Others mentioned were contract employees, staff from another company, and state college instructors. The responses for large and small companies were generally the same.

Cost Considerations

An investigation of how much money it costs to train individuals was outside the scope of this study. An attempt was made, however, to obtain from the companies some information about costs. They were asked whether the company keeps track of the cost of in-house training in electronics technology. Eighty-two percent said "Yes," while 18% replied "No." These percentages were approximately the same for both the large and small

companies.

The companies that kept track of cost were asked if the training cost as they computed it includes the trainee's salary and benefits. For 64% it did not. Small companies included salary and benefits in the cost less frequently than large companies did. The training cost was charged to the training division or department at 29% of the companies, to the trainee's division or department at 36%, and to overhead at 7%. At 21% of the companies part of the cost was charged to the training department and part to the trainee's department, while at 7% part was charged to the training department and part to a specific program or overhead. Small companies tended to split the charges more than large companies.

At 41% of the companies cost was considered an important factor in deciding whether an electronics technology course is offered in-house or whether a course offered by a community college is utilized. While important for half the large companies, it was important for only 29% of the small companies. Another 29% of the small companies said that cost is not an important factor since the community colleges do not offer what the company needs.

Cooperative Efforts

Some information was obtained that indicates cooperative efforts between the community colleges and the companies. Community college administrators were asked the number of courses in electronics technology offered during the past 12 months to meet the needs of a specific company through contractual education. Fourteen percent offered 7 to 15 courses, 21% offered 2 to 5 courses, 50% had none, and 14% offered none due to district policy. Other involvements or cooperative efforts with private companies regarding their training in electronics technology were mentioned by 36% of the college administrators, who reported from one to three such efforts. About half of the 11 efforts mentioned were training employees at companies.

A question posed to the companies was: "In addition to your own in-house courses in electronics technology, do you utilize courses offered by outside training providers or public sector institutions?" Respondents at all companies except one large company said that they do. The types of providers mentioned by more than 6% of the respondents were: community colleges (62%), equipment vendors (38%), four-year public or private col-

leges or universities (31%), private training groups or professional training organizations (25%), private technical or vocational schools (12%), and outside consultants (12%). Small companies made proportionally less use of equipment vendors than large companies did, and did not use four-year colleges or universities. Large companies did not use private technical or vocational schools.

If a community college was not mentioned in response to the question given above, the respondent was asked whether community colleges were considered as an alternative to the in-house training in electronics technology. Forty-three percent (all small companies) of the seven companies at which community colleges were not mentioned said they had, while 57% (which were all large companies) noted they had not.

Whether One Segment is Doing Training the Other Could do Better

Community college respondents were asked if they thought that private industry is doing electronics technology training that community colleges could do better or more economically. Thirty-six percent said "Yes." Another 36% did not think so, 14% did not know, and 14% answered both "Yes" and "No." The most frequent related comment, made by 21% of the respondents, was that community colleges are more economical. Those who answered "Yes" or "Yes" and "No" were asked the kind of training the colleges could do better or more economically. Forty-three percent mentioned basic training, while 29% said any kind of training in the electronics area.

Similar to the question asked at the community colleges, the company respondents were asked if they think that community colleges are doing electronics technology training that private industry could do better or more economically. Eighteen percent said "Yes," 65% replied "No," and 18% did not know. The responses for large and small companies were similar. Related comments made by more than 6% of the respondents were: community colleges do a better job of generic basic training than companies can (24%, all small companies), and community colleges are doing what they are supposed to do (12%, all large companies). No themes were apparent when those who responded "Yes" to the question were asked about the kinds of training private industry could do better. In general, while community colleges were about equally divided regarding whether private industry is doing training community colleges could do better or more economically, a majority of the companies did not think community colleges are doing training that private

industry could do better.

What Community Colleges Should Do to Help Meet Training Needs

Table 9 shows the results from asking community college staff what they think community colleges should do to meet the electronics technology training needs of private industry. From the multitude of responses, nine themes were identified. The theme most frequently mentioned (50%) was to develop, strengthen, or make better use of advisory committees. Two themes were mentioned at 36% of the colleges. The first was to identify the needs of the industry better and have better communication. The second was to make sure course offerings meet private sector needs, develop curriculum cooperatively, and customize curriculum. The other themes may be seen in the table. The 64% shown for Other things (each mentioned by one respondent) represents a large number of unique suggestions that could not be classified into themes.

Table 9

What Community Colleges Think They Should Do
to Meet the Electronics Technology Training Needs of Private Industry

What community colleges should do	Percent of Colleges (N=14)
Develop, strengthen, make better or greater use of advisory committees/groups	50
Identify the needs better, have better communication	36
Make sure course offerings meet private industry needs, develop curriculum cooperatively, customize curriculum	36
Become more responsive, flexible (including scheduling)	29
Provide more short term, modularized training; modularize curriculum; develop video packages	29
Make them more aware of what community colleges can offer and how community colleges can meet their needs	21
Do contract work or maintain programs like JTPA to get feeling of what's going on in industry, learn of needs	21
Solve the need for up-to-date equipment, facilities	21
Find more ways of updating the skills of instructors	14
Other things (each mentioned by one respondent)	64

The themes from asking company representatives what they think community colleges should do to meet the electronics technology training needs of their company are presented in Table 10. The theme most frequently mentioned (by 65% of all company respondents) was to do more to become aware of the needs, do surveys, ask companies, do market research, communicate better, or do outreach. The second most frequent theme was mentioned by 29% of the respondents. It was to make sure the curriculum reflects the needs of industry, develop specific training to meet specific needs, or do customized training. Although four other themes are shown in the table (including one that community colleges cannot meet the needs), there were a large number of unique suggestions as indicated by the 65% shown for the Other category. There were a number of differences in the responses from small and large companies, as can be seen in the table.

Table 10

What Companies Think Community Colleges Should Do
to Meet the Electronics Technology Training Needs of Their Company

What community colleges should do	Percent of Companies		
	Small (N=7)	Large (N=10)	All (N=17)
Do more to become aware of the needs, do survey, ask companies, do market research, communicate better, do outreach	86	50	65
Make sure curriculum reflects needs of industry, develop specific training to meet specific needs, do customized training	14	40	29
Community colleges cannot meet their needs: some needs on advanced undergraduate level; equipment costs high for small numbers trained; are already doing what can	14	30	24
Keep an up-to-date emphasis in the training; update instructors; use up-to-date instructional technology, equipment	14	30	24
Offer short term courses, short programs, hands-on skill training	14	20	18
Continue creating advisory committees, increase private industry representatives on them	0	20	12
Other things (each mentioned by one respondent)	71	60	65

Most of the college themes of what community colleges should do to meet private sector needs (Table 9) can be found among the company themes presented in Table 10. Three themes mentioned by the college but not by the company respondents were: become more responsive, flexible; make the private sector more aware of what the colleges offer; and do contract work or maintain programs like JTPA to get a feeling of what is going on in industry and learn of company needs. The theme mentioned by the companies but not the colleges is that the community colleges cannot meet the needs or are already doing what they can.

Secretarial Studies

Results for secretarial studies are presented below in the same sections used for electronics technology. They are: why companies offer courses in-house, courses offered and duration, purposes of the courses, duration of training, number served, target population, instructional delivery, cost considerations, cooperative efforts, whether one segment is doing training the other could do better, and what community colleges should do to help meet training needs. When possible, community college and company results are compared.

Why Companies Offer Courses In-House

This section considers reasons companies offer courses in secretarial studies in-house, advantages, disadvantages, and company familiarity with community college programs.

Reasons companies offer courses in-house. Table 11 shows the results from asking community college respondents what they think the reasons are for companies offering courses in secretarial studies in-house, instead of or in addition to utilizing community college courses. A total of seven themes were identified from the responses. The theme most frequently mentioned (by 87% of the respondents) was that companies can control what employees are learning, customize the training, orient it to their specific needs, or do company specific training. Two themes were each mentioned by 40% of the respondents. The first was that companies lack awareness of community college capabilities, the second that companies can orient the training to their specific equipment.

Table 12 shows the reasons the company respondents gave for offering courses in secretarial studies in-house, instead of or in addition to using public sector courses. Five themes were identified, but there were also a

large number of unique reasons given as shown by the large value (71%) for the Other reasons category. The main theme, mentioned by 86% of the respondents, was that they can control the subject matter, customize, orient to their specific needs, or make training company specific. The other four themes, none mentioned by more than 29% of the respondents, are shown in the table.

Table 11

Community College Perceptions of Reasons Companies Offer Courses in Secretarial Studies In-House

Reason	Percent of Colleges (N=15)
They can control what employees are learning, customize the training, orient it to their specific needs, do company specific training	87
Lack of awareness of community college capabilities	40
They can orient the training to their specific equipment	40
Better control: know where employees are; security	20
Convenience to employees, don't have to travel, get training during work hours	20
They have flexibility of scheduling the training	13
They can indoctrinate employees in its organizational culture, way of doing things	13
Other reasons (each mentioned by one respondent)	40

Table 12 also shows differences between large and small companies. For example, controlling the subject matter was less frequently mentioned by respondents at small companies, and wanting employees trained in the least amount of time was not mentioned.

A comparison of Tables 11 and 12 shows that control of the subject matter or customization was the theme most frequently mentioned by both community college and company respondents. Three other themes are similar for each: knowing where employees are or being assured that they receive training, relating the training to specific equipment, and convenience to employees. However, three themes appeared for the community colleges that

were not identified for the companies. They were: lack of awareness of community college capabilities, flexibility of scheduling, and ability to indoctrinate employees. The theme identified for the companies but not the community colleges was that they want employees trained in the least amount of time.

Table 12

Reasons Companies Offer Courses in Secretarial Studies In-House

Reason	Percent of Companies		
	Small (N=5)	Large (N=9)	All (N=14)
Can control the subject matter, customize, orient to their specific needs, make training company specific	60	100	86
Convenience to employees, easy to get training on site, managers don't want employees to be gone	40	22	29
Want employees trained in the least amount of time, duration of training	0	33	21
The training, skill improvement is related to new or specialized equipment; public sector not using most recent hardware/software	20	22	21
To make sure employees have the skills needed, be assured that they receive training	20	11	14
Other reasons (each mentioned by one respondent)	20	100	71

Advantages of offering courses in-house. Community college perceptions of the advantages to companies of offering their own courses in secretarial studies in-house are shown in Table 13. The most frequently mentioned (80%) of the eight themes was that companies can control what employees are learning, customize, orient the training to their specific needs, or do company specific training. No other theme was mentioned by more than 27% of the respondents.

Table 13

Community College Perceptions of Advantages to Companies of Offering Courses in Secretarial Studies In-House

Advantage	Percent of Colleges (N=15)
Can control what employees are learning, customize, orient to their specific needs, do company specific training	80
Can control employee time, know where they are, do closed training	27
Convenience to employees, don't have to travel, get training during work time	27
Can control the length of training, have short training	20
Can control scheduling, schedule it when they want to	20
Have more flexible curriculum materials and can make packages available for individual study	20
Have access to equipment, software, and facilities used in their business	20
Training is often free since offered by equipment manufacturers at no additional cost	13
Other advantages (each mentioned by one respondent)	33

The results from asking the company representatives the advantages of offering courses in secretarial studies in-house are given in Table 14. Most frequently mentioned (by 57%) was that they can control the subject matter, customize, orient to their specific needs, or make training company specific. The second most frequently mentioned theme (by 43%) was convenience to employees, don't need to travel, or can be trained on company time. Seven other themes are shown in the table. Small company respondents did not mention convenience to employees as frequently as those from large companies (20% vs. 56%). There were three themes mentioned at small companies only, and three mentioned only at large companies.

The theme mentioned most frequently by community college and company respondents was control of the subject matter, as seen in Tables 13 and 14. Themes of advantages mentioned by community college personnel only were: companies have more flexible curriculum materials; they have access to equipment, software, facilities used in their business; and training is often free since it is offered by equipment manufacturers at no additional

cost. The four themes identified only for the companies are: employees receive company specific training, lower cost, can control quality of training, and training is timely in terms of technical advancements.

Table 14

Advantages of Companies Offering Courses in Secretarial Studies In-House

Advantage	Percent of Companies		
	Small (N=5)	Large (N=9)	All (N=14)
Can control the subject matter, customize, orient to their specific needs, make training job specific	40	67	57
Convenience to employees, don't have to travel, can be trained on company time	20	56	43
Employees are trained in least amount of time possible, training completed soon	20	33	29
Employees receive company specific information	40	0	14
Time frames and scheduling	40	0	14
Can control attendance, only their people involved in the classes	40	0	14
Lower cost, cost effective since have training staff and facilities set up	0	22	14
Can control quality of training, monitor to assure is of high quality and consistent	0	22	14
Training is timely in terms of technical advancements, able to use own technologies	0	22	14
Other advantages (each mentioned by one respondent)	80	33	50

Disadvantages of offering courses in-house. The results from asking community college staff what they think are the disadvantages to private companies of offering courses in secretarial studies in-house are shown in Table 15. The theme mentioned most frequently (by 53%) was that training is usually not thorough, concentrates on specific skills only, or may be narrow and not general. Although cost was mentioned by 47% of the college respondents, no other theme was noted by more than 27%. These themes may be seen in the table, which also indicates that a large number of unique disadvantages were mentioned.

Table 15

Community College Perceptions of Disadvantages to Companies of Offering Courses in Secretarial Studies In-House

Disadvantage	Percent of Colleges (N=15)
Training is usually not thorough; concentrates on specific skills only; may be narrow, not general	53
Cost	47
May not have enough work stations, equipment, or support systems (e.g., AV department)	27
Trainees do not receive college credit	20
Instructors may have limited background, experience, expertise, training	20
May not be as up-to-date as community colleges on content, books, equipment	13
Cannot manage the instruction as efficiently as community colleges	13
Other disadvantages (each mentioned by one respondent)	53

Themes from asking company personnel the disadvantages of offering courses in secretarial studies in-house are given in Table 16. Four themes were identified, but none was mentioned by more than 29% of the respondents. Disadvantages mentioned at 80% of the small companies were placed in the Other category. Staff at small companies more frequently mentioned than those at large companies that often one gets more thorough coverage at a college (60% vs. 11%). Cost was not mentioned as a disadvantage at any small company.

Three of the community college themes in Table 15 may be found among the company themes in Table 16. Four themes of disadvantages identified only for the colleges were: companies may not have enough work stations, equipment, or support systems; trainees do not receive college credit; instructors may have limited background, expertise; and companies cannot manage the instruction as efficiently as community colleges. Two themes found only for the companies were: training takes people away from their regular job; and none, since those courses that have disadvantages are dropped.

Table 16

Disadvantages of Companies Offering Courses
in Secretarial Studies In-House

Disadvantage	Percent of Companies		
	Small (N=5)	Large (N=9)	All (N=14)
Often get more thorough coverage at a college, may be missing most current technology, is not efficient to teach certain skills	60	11	29
Takes people away from their regular job; supervisors don't want secretaries gone for training, interrupt training	40	22	29
Cost	0	33	21
None (those courses that have disadvantages are dropped)	20	11	14
Other disadvantages (each mentioned by one respondent)	80	33	50

Company familiarity with community college programs. The company representatives were asked if they were generally familiar with secretarial training courses offered at local community colleges. Eighty-six percent said that they were. A comment made by 21% of them was that they look at college catalogs.

Courses Offered and Duration

Descriptive titles of all secretarial studies courses offered by the target community colleges and companies were obtained from college catalogs, company course descriptions, and interviews with training coordinators. The information is summarized in Table 17 for the community colleges. Even though the course titles were not exactly the same among the colleges, there was little difficulty in identifying corresponding courses offered by the colleges. Courses offered by only one college are not included in the table.

All 15 community colleges offered Typing courses and Machine Transcription courses. Other courses offered by over 70% of the colleges were: Shorthand (Gregg), Word Processing (specific software or equipment), Introduction to Word Processing/Personal Computer, Filing and Record Management, Office Procedures, Keyboarding for Computers, Business Machines, and Business English/Communication. This shows that most community colleges offer a

Table 17

Content and Length of Secretarial Studies Courses Offered by Community Colleges

Course Content	% of Colleges Offering Courses (N=15)	No. of Courses for a College	Range of Semester Units[a]	Median Units[a]
Keyboarding for Computers	73	1-3	1-3	1.5
Typing	100	2-3	1-4	3
Shorthand (Gregg)	93	1-3	1-4	4
Shorthand (others)	60	1-2	1-4	2
Machine Transcription	100	1-3	1-4	2
Certified Professional Secretary	27	1-5	1-3	1
Business Machines	73	1	1-2	1
Filing and Record Management	80	1	2-3	3
Office Procedures	80	1	3-4	3
Office Human Relations	33	1	1-3	2
Legal Terminology, Procedures	47	1-2	2-4	3
Medical Terminology, Procedures	20	1-3	2-4	3
Secretarial Administration	20	1	3-4	3
Business English, Communication	73	2	2-4	3
Proofreading	20	1	1-2	1.5
Survey of Office Automation (Non-equipment)	47	1	1-3	2
Word/Information Management (Supervisors)	40	1	2-3	3
Introduction to Word Processing, PC	80	1	1-3	2
Word Processing (Specific Software/ Equipment)	87	1-8	1-3	2
Spreadsheets	13	1	1-2	1.5
Database	13	1-2	2	1.5
Graphics	13	1	1-2	1.5
Telecommunications	13	1	2-3	2.5

Note. Courses offered by only one college are not shown.

[a]The range and median for semester units shown are for individual courses, not for all courses combined under a given content area.

wide range of secretarial studies courses.

Because of the difficulties involved in computing exact instructional hours for all secretarial courses offered by the community colleges, course duration is shown in Table 17 in terms of semester units rather than instructional hours. The range of semester units shown in the table is for individual courses, not for all courses combined in a given content area. As expected, course duration shows a large variation in certain content areas (e.g., one to four units for a Typing course), but a much smaller variation in other areas (e.g., two to three units for a Filing and Record Management course). The median semester units indicate that course duration also varies greatly among the various content areas. For instance, a Keyboarding for Computer course is typically 1.5 units (27 hours), while a Typing course is typically 3 semester units (54 hours).

Table 18 presents the course content and contact hours for companies. At least half of the companies offered courses in: Effective Communication (telephone and listening skills), Introduction to Word Processing/Personal Computers, Business Letter and Memo Writing, Managing Interpersonal Relations, Word Processing (specific software or equipment), and Spreadsheets.

The data indicate that company in-house courses are concentrated in the areas of word processing, human relations, and effective communications in writing and listening, while the college courses are more evenly spread over the whole range of secretarial studies from typing and shorthand to office procedures and word processing. The range and median of contact hours for secretarial studies courses offered by the companies clearly show that the courses are much shorter than the secretarial courses offered by community colleges. For example, an Effective Writing or Corporate Grammar course offered by a company is typically 12 hours long while a community college Business English course is typically 3 units (54 hours). The companies most often offer an 8-hour introductory course on word processing while the community colleges offer a 2-unit introductory word processing course (36 hours).

Purposes of the Courses

Administrators at the community colleges reported the purposes of the secretarial studies program offered at the college. The representatives of the companies were asked the purposes of their in-house courses. All

Table 18

Content and Length of Secretarial Studies Courses Offered by Companies

Course Content	% of Companies Offering Courses (N=14)	No. of Courses for a Company	Range of Contact Hours[a]	Median Contact Hours[a]
Effective Writing, Corporate Grammar	43	1-2	6-20	12
Business Letter, Memo Writing	50	1	4-12	8
Interviewing Skills	21	1	2-6	3
Effective Communication (Phone, Listening Skills)	57	1-2	2-8	2
Managing Interpersonal Relations	50	1	2-16	8
Personal Growth (Stress Management, Career Development, Assertive Skills, etc.)	36	1-3	2-8	6
Time Management	43	1	4-16	4
Introduction to Word Processing/PC	57	1	3-40	8
Word Processing (Specific Software/ System)	50	1-4	8-16	12
Spreadsheets	50	1-2	3-24	8
Database	43	1-2	3-16	8
Graphics	21	1	3-8	8
Electronic Mailing	21	1-4	3-8	3

Note. Courses offered by only one company are not shown.

[a]The range and median of contact hours shown are for individual courses, not for all courses combined under a given content area. In determining each of the ranges, one extreme case was ignored that has unusually small or large contact hours.

community college respondents said that the purposes were helping students for job entry, helping students for job maintenance, and helping students for job advancement. In addition, 20% reported that another purpose was the improvement of basic skills or enrichment.

For the companies, helping employees for job entry (including the retraining of current employees) was mentioned by 43% of the respondents. Helping employees for job maintenance was mentioned by 86%, helping employees for job advancement by 79%. Job entry was mentioned at more of the

small companies (60%) than the large (33%), while job advancement was noted at more of the large (89%) than the small (60%).

Duration of Training

Community college staff were asked approximately how many hours are required to complete the secretarial studies program. The question was difficult to answer and the answers were difficult to analyze for the reasons mentioned above in the electronics technology section.

The number of semester units in the secretarial studies programs (excluding degree programs) appeared to range from 11 to 77 over the 15 community colleges. The number of instructional hours ranged from 198 to 1,386. The average number of instructional hours at a college (the average of the shortest and longest options) ranged from 216 to 990. The difference between the number of instructional hours of the shortest and the longest options ranged from 36 to 792 with a mean of 227.

The company respondents were asked the approximate number of instructional hours a typical trainee spends in in-house secretarial skills courses, and the time interval. The training appeared to be continuous as needed for 43% of the companies. For two small companies the amount of training was 3 hours per 3 months and 12 hours per year. At four large companies it was 2 hours per month, 4 to 8 hours per year, 10 to 20 hours per year, and 24 hours per year.

Considering the 71% of the companies that had training that did not appear to be continuous, the median number of instructional hours was 27, 40 hours for the large companies and 20 for the small. The number of hours for the three small companies was 16, 20, and 44. The range for the large companies was 8 to 160, with 57% of them in the interval 21 to 44 hours. The training time interval was a week for one small company and 12 months for the other two. The time interval for the large companies ranged from a week to 12 months, with 29% of them being 12 months. The most intensive training for the small companies was 16 hours over a week, the least intensive 12 hours over a year. For the large companies the most intensive training was four weeks over four weeks, the least 8 hours over a year.

Company training had considerably fewer instructional hours than community college training in secretarial studies, as might have been anticipated. The shortest community college program was 198 instructional hours.

The longest company program was 160 hours. However, 50% of the company training had a time interval of 8 to 12 months.

Number Served

To obtain data about the number of individuals served, community college administrators were asked approximately how many persons were enrolled in the secretarial studies program in the last year. Fifty-three percent reported duplicated counts, and 47% gave unduplicated counts. For those reporting unduplicated counts, the number of persons enrolled ranged from 250 to 2,028 with a median of 776. The range was 435 to 7,078 with a median of 1,808 for those reporting duplicated counts.

Company representatives were asked approximately how many persons were trained in the field in-house during the past 12 months. Sixty percent of the small companies gave unduplicated counts, which ranged from 20 to 200 persons trained with a median of 23. Forty-four percent of the large companies also reported unduplicated counts. They ranged from 6 to 3,000 with a median of 525 persons trained. For the two small companies (40%) that provided duplicated counts, one trained 500 employees, the other 1,700. The 56% of the large companies that gave duplicated counts had a range of 350 to 2,200 with a median of 500 persons trained.

Using the unduplicated counts, for the companies and colleges included in the study the median for small companies was less than the median for large companies, while the median for the large companies was less than the median for the colleges. The total number of persons trained by the 14 companies in the study was considerably less than the number trained by the 15 community colleges.

Target Population

Two questions were asked the company respondents to obtain some information about who they train. The first was about the percentage of course enrollees that took the courses in secretarial training on a voluntary basis, and the percentage that took them because they were required or recommended. The means for the small companies were 49% voluntary, 19% recommended, and 32% required. The corresponding values for the large companies were 39%, 13%, and 48%, respectively. The values for individual companies ranged from 100% voluntary to 100% required.

The second question asked was whether the courses offered in secretar-

ial training are open to people other than company employees. Only one respondent, from a large company, said "Yes." Sixty percent of the small and 89% of the large company respondents replied "No." The remaining two small companies (40%) said the courses are open to employees of other company divisions but not the general public, and sometimes they are asked to train outside users.

Instructional Delivery

The aspects of instructional delivery considered in this section are the major instructional methods used, work experience and on-the-job training, the need to travel to the training site, training on company time, the need for specialized equipment or facilities, and who delivers the instruction.

Major instructional methods used. Community college and company respondents were asked the major instructional methods used. All of the community colleges used instructor lecture/laboratory, 80% used independent study, including programmed instruction, 80% used computer aided instruction, and 33% employed simulation or the use of simulators.

The major instructional methods used by the companies were instructor lecture/laboratory (100%), independent study (57%), computer aided instruction (57%), simulation (29%), and workshops (14%). Other methods, each used at 7% of the companies, included videotape training, the use of audiovisual aids, and role modeling. The large companies used independent study and computer aided instruction more than the small companies did (67% vs. 40% and 78% vs. 20%, respectively). The small companies used simulation more (40% vs. 22%). All the colleges and companies used instructor lecture/laboratory, but the colleges used independent study and computer aided instruction more than the companies did.

Work experience and on-the-job training. College staff were asked the percentage of the courses in the secretarial studies program that require work experience as part of the course. All of the answers fell in the interval 0 to 20%, and for most of the colleges the answer was "None." The companies were asked about the percentage of their courses that require on-the-job training as part of the course. The answers ranged from 0 to 100%. Twenty-one percent of the answers were in the interval 81 to 100%, 14% in the interval 61 to 80%, 7% in the interval 21 to 40%, and 57% in the interval 0 to 20%. All small company responses were in the interval 0 to 20%,

while only 33% of large company answers were in that interval. An additional 33% of the large company answers were in the interval 81 to 100%. Hence, small companies tended to require less on-the-job training as part of secretarial skills courses than large companies did.

Need to travel to the training site. Community college students usually have to travel to the training site. Seventy-nine percent of the companies said that the employees did not have to travel to places other than their workplace to get the training. As previously mentioned, "workplace" was defined as the company's local facility. The results were similar for both large and small companies. For one large company employees had to come to the facility from within 25 miles, for another they had to travel in the local area to the training location. At one of the small companies some employees had to travel, but not over 10 miles.

Training on company time. Employees at all of the companies took courses in secretarial training on company time during their regular work hours. At 14% of the companies they took courses on company time but during other than their regular working hours, while at 21% they took courses on their own time. (The sum of these percents exceeds 100 since some companies have different kinds of training programs offered at different times.) Employees took courses on company time during their regular working hours at all of the large and small companies. Only at the large companies did employees take secretarial training courses on company time other than their regular working hours, or on their own time.

Need for specialized equipment or facilities. Companies may offer courses in secretarial training because they require specialized equipment or facilities which cannot be made available outside the company. However, only 7% of the company respondents said such equipment or facilities were required in 81 to 100% of the courses, 7% reported that they were required in 41 to 60% of the courses, and another 7% noted that they were required in 21 to 40% of the courses. For the remaining 79% of the companies specialized equipment or facilities were required in less than 20% of the courses. At most of these they were not required at all. All the responses for the small companies were in the interval 0 to 20%.

Who delivers the instruction. A question asked of private sector representatives that was not appropriate for the community colleges was: "Who delivers the instruction for the in-house training in secretarial skills?" It was delivered by company staff at 93% of the companies, by vendors at 29%, and by outside consultants at 14%. Others mentioned were instructors from community colleges (7%) and private trainer staff (also 7%). The responses for large and small companies were generally the same.

Cost Considerations

As mentioned before, an investigation of how much money it costs to train individuals was outside the scope of this study, but some information about costs was obtained from the companies. One question asked was whether the company keeps track of the cost of in-house training in secretarial skills. Seventy-one percent said "Yes," 29% replied "No." Small company staff said "Yes" less frequently that staff at large companies (40% vs. 89%).

The companies that kept track of cost were asked if the training cost as they computed it included the trainee's salary and benefits. It did for 70%. Small companies included salary and benefits in the cost less frequently than large companies. The training cost was charged to the training department at 30% of the companies, to the trainee's department at 20%. At 30% of the companies part of the cost was charged to the training department and part to the trainee's department, while at 10% it was charged to a separate company training account. Small companies did not charge the trainee's department, and tended to charge the training department or split the charges more than large companies.

At 57% of the companies cost was considered an important factor in deciding whether a secretarial training course is offered in-house or whether a course offered by a community college is utilized. The results were similar for both large and small companies. A comment made at two large companies was that they offer training primarily because of the specific need of their system.

Cooperative Efforts

As mentioned in the section on electronics technology, some information was obtained that indicates cooperative efforts between the community colleges and the companies. Administrators at the community college were asked the number of courses in secretarial studies offered during the past 12

months to meet the needs of a specific company through contractual education. Sixty-seven percent said "None," 13% had none due to district policy, and 21% offered one to three courses. Other community college involvements or cooperative efforts with private companies regarding their employee secretarial training were mentioned by 47% of the college administrators, who reported from one to four such efforts. Thirty-eight percent of the 13 efforts mentioned were training employees for one or more companies, 23% were work with advisory committees, and 15% were having companies send employees to a college program or laboratory.

A question asked at the companies was: "In addition to your own in-house courses in secretarial training, do you utilize courses offered by outside training providers or public sector institutions?" Staff at 71% of the companies said that they did. The types of providers mentioned by more than 10% of these respondents were: private training groups or companies (60%), community colleges (50%), consultants (30%), outside vendors (20%), and state universities (20%). Small companies made proportionally more use of community colleges than large companies and did not use state universities.

If a company did not mention that a community college was utilized, the respondent was asked whether community colleges were considered as an alternative to the in-house secretarial training. Only 22% of the nine companies at which community colleges were not mentioned said they had, while 78% noted they had not. None of the small companies and only 29% of the large had considered community colleges as an alternative.

Whether One Segment is Doing Training the Other Could do Better

Community college respondents were asked if they thought that private industry is doing secretarial studies training that community colleges could do better or more economically. Only 20% said "Yes" while 40% did not think so, 20% did not know, and 20% answered both "Yes" and "No." The most frequent related comments, each mentioned by 13% of the respondents, was that community colleges can do it better but not more economically, and that the colleges can do it more economically but not better. The college respondents who answered "Yes" or "Yes" and "No" were asked the kind of training the colleges could do better or more economically. Thirty-three percent of them said standard secretarial training, 33% said things based on

knowing how to teach, and another third said everything industry does in the secretarial area.

The company respondents were asked if they think that community colleges are doing secretarial training that private industry could do better or more economically. Only 14% said "Yes," 79% replied "No," and 7% did not know. The responses for large and small companies were similar. A related comment made at 14% of the companies was that secretarial training is expensive. In general, community colleges respondents did not think that private industry was doing training community colleges could do better or more economically, and most of the companies did not think community colleges were doing training that private industry could do better.

What Community Colleges Should do to Help Meet Training Needs

Table 19 shows the results from asking community college staff what

Table 19

What Community Colleges Think They Should Do
to Meet the Secretarial Studies Training Needs of Private Industry

What community colleges should do	Percent of Colleges (N=15)
Identify the needs better, have better communication, conduct survey to find out standards for training	47
Make sure curriculum emphasizes behavior/skills companies want, develop curriculum cooperatively, keep curriculum current	33
Do better job of letting them know what's available at community colleges, marketing, public relations	27
Maintain close contacts with advisory committees, have wider spectrum of members	20
Become more responsive, flexible; make sure offerings at times best suited to employees	20
Make sure equipment and software as representative as possible, state of the art	20
Package courses for shorter term training; tailor courses so can offer flexibly	20
Try to get money to enable increased contacts with industry	13
Make more of a commitment to serve the needs, rearrange priorities to do more	13
Other things (each mentioned by one respondent)	60

they think community colleges should do to meet the secretarial studies training needs of private industry . Nine themes were identified from the responses, and there were a large number of suggestions that could not be placed in themes. The theme most frequently mentioned (by 47%) was to identify the needs better, have better communication, or conduct a survey to find out standards for training. The second most frequently mentioned theme (by 33%) was to make sure the curriculum emphasizes the skills companies want, develop curriculum cooperatively, or keep curriculum current. The other themes may be seen in the table.

Table 20 presents the themes from asking company representatives what they think community colleges should do to meet the secretarial training

Table 20

What Companies Think Community Colleges Should Do
to Meet the Secretarial Studies Training Needs of Their Company

What community colleges should do	Percent of Companies		
	Small (N=5)	Large (N=9)	All (N=14)
Become more aware of the needs, survey companies, publicize courses, communicate better, do outreach	80	56	64
Modify the curriculum (each of the following mentioned by one respondent): include assertiveness training plus communication and problem solving skills; include human relations skills; offer personal development courses related to careers and business; stress written and oral communication and language skills; teach secretaries about sources of various types of information and how to work; include more training on microcomputers; emphasize general work readiness training (work habits, etc.)	80	33	50
Keep up with new technology, be more up-to-date in terms of equipment and software	0	44	29
Nothing: community colleges are already meeting the needs; people with the required basic skills are hired; community colleges cannot duplicate what the company is doing	20	22	21
Plan curriculum development to meet industry needs, use current information about job performance requirements	0	33	21
Other things (each mentioned by one respondent)	40	22	29

needs of their company. The theme most frequently mentioned (by 64% of all company respondents) was to become more aware of the needs, survey companies, publicize courses, communicate better, or do outreach. The second most frequent theme was mentioned by 50% of the respondents. It was to modify the curriculum to include those things mentioned in the table. Three other themes, including one that community colleges should do nothing, are also shown in the table. There were a number of differences in the responses from small and large companies.

Three of the nine community college themes shown in Table 19 can be found among the company themes in Table 20. Six themes were identified from community colleges but not from the companies. They were: maintain close contacts with advisory committees; become more responsive, flexible; do a better job of letting them know what's available at the community colleges; package courses for shorter term training; try to get money to enable increased contacts with industry; and make more of a commitment to serve the needs. Two themes identified only from company responses were: modify the curriculum (to include the skills or topics shown in the table); and nothing (for the reasons shown in the table).

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This section addresses the specific questions to be answered by the study and other conclusions.

Why Does Industry Offer Courses Instead of Utilizing Community College Programs?

Companies have a number of reasons for offering courses in electronics technology in-house. The two major reasons are that they can orient the training to their specific needs, and training is unavailable from community colleges. It may not be available from the colleges since the company developed the technology, it deals solely with their product line, or it is unique. The reasons small companies offer training differ somewhat from those for large companies (see Table 2).

The advantages to companies of offering courses in electronics technology in-house are similar but not identical to the reasons for doing so. The two major advantages for small companies are that the trainees learn 100% applicable information, and it is cost effective since the training staff is on salary. For large companies the two major advantages are that they can control the subject matter and convenience to employees.

The main reason both large and small companies offer courses in secretarial studies in-house is that they can orient the training to their specific needs and make training company specific. Another major reason for small companies is convenience to employees. Large companies have a number of unique reasons why they offer the courses in-house. (Some are noted in Table 12.)

Control of the subject matter and convenience to employees are the main advantages to large companies of offering courses in secretarial studies. Control of the subject matter is also a major advantage for small companies, as are: employees receive company specific information, control over time frames and scheduling, control over attendance, and a number of unique advantages.

What Can Community Colleges Do to Help Industry Meet Training Needs?

The two major things that companies think community colleges should do to meet the electronics technology training needs of their company are to: do more to become aware of the industry needs, and make sure the curriculum

and training reflects the needs of industry. (Other suggestions are shown in Table 10.) There are also a number of things that community colleges can do that are unique to individual companies. However, there are a number of companies whose staff believe that the colleges cannot meet their needs (e.g., the trainer needs specialized knowledge or the training is geared to specialized company products). There are also a number of companies whose staff believe the colleges are already doing what they can. Community college staff believe that the main thing they should do is to develop, strengthen, or make better use of advisory committees, which appears to be less action oriented than what company staff recommend. There are, however, a number of other things that the college staff believe they should do to help industry meet electronics technology training needs. (See Table 9.)

The main thing that both company and community college staff believe the community colleges should do to meet the secretarial training needs of companies is to become more aware of the needs. The next most important thing is to modify the curriculum. Some curriculum modifications suggested by company representatives are shown in Table 20. There are, however, some companies that believe the community colleges are already meeting the needs or they cannot duplicate what the company is doing. As with electronics technology, there are a number of other things that community college staff believe they should do to help industry meet secretarial training needs. (See Table 19.)

Is There a Significant Overlap Between Industry and Community College Programs?

There is a significant overlap between courses offered by community colleges and by companies in certain content areas, especially Fabrication and Assembly, DC Theory and Lab, and Electronic Systems Analysis. However, most company courses are much shorter than similar college courses and often cover only a portion of the college course content. Company courses are also often geared to their own product or process. Therefore, the overlap cannot be considered as a significant unnecessary overlap.

There is no significant overlap between secretarial studies courses offered by community colleges and companies except for the area of Word Processing/Office Automation. Even though there is some overlap in this area it is not considered a significant unnecessary overlap because most companies are oriented to the specific software or equipment used in their

organizations. The only other areas in which companies offer a significant number of courses are personal and interpersonal development, and communication skills development. These courses are typically 2 to 12 hours long.

Community College Staff Perceptions

There are both similarities and differences between the reasons companies offer courses and the perceptions of community college staff as to why companies offer training. Some advantages to companies are not generally perceived by community college staff, such as trainees learn 100% applicable information. Also, there are some things perceived by community college staff as disadvantages that may not be (e.g. trainees do not receive college credit), and a few disadvantages that are not generally perceived by community college staff (e.g., training takes people away from their regular job).

Courses Offered and Duration

Most community colleges offer a wide range of electronics technology courses, while companies offer such courses in a very limited number of content areas. The depth of content covered by company courses in a given content area varies greatly. A typical electronics technology course offered by a company requires 6 to 36 contact hours, which is less than half the hours for a typical community college electronics course.

Most community colleges also offer a wide range of secretarial studies courses. Company in-house courses are concentrated in the areas of word processing, human relations, and effective communication in writing and listening. A typical secretarial studies course offered by a company requires 2 to 12 contact hours, which is less than one-fourth the hours for a typical community college secretarial course.

Purposes of the Courses

The major purposes for community college programs in both electronics technology and secretarial studies are helping students for job entry, helping students for job maintenance, and helping students for job advancement. Helping employees for job maintenance and for job advancement are the main purposes for companies, with helping employees for job entry (including the retraining of current employees) being less important.

Number Served

For the companies and community colleges included in the study, the median number of people trained by the companies in a year in electronics technology is less than the median for the colleges, as might be expected. However, the total number of persons trained in a year by the 17 companies in the study is considerably greater than the number trained by the 14 community colleges. In secretarial studies the median number as well as the total number of people trained by the 14 companies in a year are less than the median and the total number for the 15 colleges.

Target Population

Companies do not usually offer their courses in either electronics technology or secretarial studies to the general public.

Instructional Delivery

Both the companies and the colleges use instructor lecture/laboratory as the major instructional method in both electronics technology and secretarial studies. In electronics technology, the companies use independent study and computer aided instruction more than the colleges, while the colleges use simulation more. However, the colleges use independent study and computer aided instruction more than the companies do in secretarial studies.

Little or no work experience is required as part of community college courses in either electronics technology or secretarial studies. A majority of company courses in electronics technology require on-the-job training as part of the course, and some courses in secretarial studies require it.

Most or all employees take electronics technology courses on company time, but many also take them on their own time. Almost all employees take secretarial studies courses on company time, but some also take them on their own time.

Most companies do not offer courses in either electronics technology or secretarial studies that require specialized equipment or facilities which cannot be made available outside the company. Most, but not all, in-house training is delivered by company staff.

Cost Considerations

About a quarter of the companies do not keep track of the cost of in-house training. Most of the companies that teach electronics technology and

keep track of their training costs do not include the trainees' salary and benefits in their computations. However, most of the companies that teach secretarial studies and keep track of their training costs do include the trainees' salary and benefits. For a majority of the companies, cost is not considered an important factor in deciding whether an electronics technology course is offered in-house or whether a course offered by a community college is utilized. However, for a majority of companies cost is considered an important factor in deciding whether a secretarial studies course is offered in-house.

Cooperative Efforts

A majority of the community colleges did not offer either electronics technology or secretarial studies courses during the last year to meet the needs of a specific company through contract education. A majority also did not have any other involvements or cooperative efforts with companies regarding their training in electronics technology, but about half had such involvements or efforts in the secretarial studies area.

Just about all companies utilize electronics technology courses offered by outside training providers or public sector institutions in addition to their own in-house courses. A majority of them use community college courses. A majority of companies utilize secretarial studies courses offered by outside providers, and about half of them use community college courses.

Whether One Segment is Doing Training the Other Could Do Better

In general, while community college administrators are equally divided about whether private industry is doing electronics technology training that community colleges could do better or more economically, a majority of the companies do not think that the colleges are doing training that private industry could do better. Community colleges do not generally think that private industry is doing secretarial studies training that the colleges could do better or more economically, and most companies do not think the colleges are doing training that private industry could do better.

The notion is held by some people in industry and education that there are unnecessary duplications among course offerings by companies and community colleges. This notion is not borne out by this study. The study shows that at least in electronics technology and secretarial studies, a

majority of the company in-house courses are designed either to teach employees a very narrow range of specific skills in a short time, or are specifically geared to their own company products or processes. There is not very much that colleges can do in this area.

However, there is an area where industry and college cooperation should be mutually beneficial. Many courses offered by companies and community colleges in certain topic areas are very similar in purpose and content. Some examples are courses in Introduction to Electronics, Electronic Circuit Analysis, Human Relations, and Introduction to Word Processing. If the colleges communicate better with industry, modify their courses in the format desired by industry (e.g., shorter duration), and offer them at locations convenient to target employees, more companies will no doubt take advantage of college offerings.

Recommendations

The following recommendations are offered:

1. It is recommended that the California community colleges integrate the findings from this study into program planning.

2. It is recommended that each California community college: (a) conduct surveys to learn more about the training needs of industry in its service area; (b) take steps to assure that its curriculum and training reflect the needs of industry; and (c) place greater stress on the use of contract education as a method for helping private industry meet its training needs.

3. It is recommended that each California community college: (a) undertake activities to make private industry more aware of what the college can do to help industry with its training; (b) designate one contact point (person or office) that should be contacted by industry representatives for information and assistance; and (c) prepare and distribute to private industry documents that describe the college's capabilities and the contact point for the college.

4. It is recommended that private industry representatives who are responsible for employee training routinely consider the possibility of using community colleges as a source for employee training whenever such needs arise at their company. Each community college has a person who is responsible for occupational education programs at the college, who can be

contacted for information and further assistance.

5. It is recommended that the Statewide Occupational Education Research and Evaluation Committee consider strategies for the implementation of the recommendations contained in this report.

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APPENDIX A

REVIEW OF THE LITERATURE

A literature search was conducted for studies that compared the vocational training activities of the public and private sectors, but little was found that focused specifically on this topic. However, a considerable amount of literature was found on employer-sponsored education and training activities. Major studies on this topic during the 1970s and 1980s were reviewed to identify (a) the reasons why the employers are offering in-house training, (b) the scope or extent of their training activities, and (c) the content of their training.

An extensive study of the extent of employer-sponsored education was carried out for the Conference Board by Lusterman (1977). The study was based on a survey of 610 corporations with 500 or more employees, and combined results from a 12-page questionnaire with personal interviews. The study revealed that most business executives were critical of the performance of the nation's schools and colleges in preparing people for work. The executives were especially concerned about the lack of communications and mathematical skills among new employees. They considered their companies' training activities as legitimate and necessary business functions. They thought that: an in-house program offers greater opportunity to shape instruction to a company's needs; company specialists are the best available instructors; course offerings can be scheduled for administrative convenience; in-house courses offer a company more opportunity to establish controls and standards for employee performance in the learning situation; such courses tend to increase employee loyalties; and confidential plans and proprietary materials can be protected.

With regard to the extent and content of the employer-sponsored training, the Lusterman study revealed that 75% of the surveyed companies provided some in-house courses for employees. Eleven percent of the employees took part in in-house courses during working hours, while 2% took the courses during nonworking hours. About 60% of the companies offered courses in management development skills, 54% in functional-technical skills, and 8% in basic (remedial) skills. Direct expenditures were estimated at $2 billion in 1975.

As interest in employer-sponsored education intensified, a sourcebook

on business and higher education collaboration was published (Gold, 1981). In its preface, Harold L. Hodgkinson speculated that the investment level of $30 to $50 billion for a "second system" of postsecondary education located in industry was coming close to the net worth of the 3,500 colleges and universities in the country whose total investment was about $55 billion. Craig and Evers (1981) pointed out the difficulties in determining the exact magnitude of employer training expenditures but estimated a $30 billion investment in 1980 by industry for employee education and training. This estimate was based on information provided by members of the American Society for Training and Development (ASTD), who were representing companies with large corporate training programs. The reasons given for employer-provided education were: to compensate for inadequacies of traditional education in basic skills, communication, and interpersonal relations; to cope with economic and social changes that affect the workplace; to provide technical and managerial training for upward mobility; to cope with changes in technology; to protect proprietary information; and for convenience in scheduling and to employees. Craig and Evers also pointed out that the great bulk of employer-provided education is performed in-house or through consultants with very little through campus-corporate programs. They emphasized the need for higher education institutes to maintain open communication with industry and be more responsive to its training needs.

In one of the ASTD National Issues Series, Carnevale and Goldstein (1983) estimated that industry and government provided about 17.6 million courses to 11 million workers in 1981, and 68% of the courses were offered in-house. The in-house training cost was estimated at between $5 billion and $10 billion. The content of the courses included business (40%), engineering (19%), health fields (13%), social studies and law (6%), education (5%), language/communications (3%), and others (14%). These findings were based on data from two previous surveys: the Lusterman study mentioned above, and a Survey of Participation in Adult Education conducted in 1981 by the Bureau of the Census for the National Center for Educational Statistics. Carnevale and Goldstein pointed out that their estimates were all put together from bits of information with bold assumptions, and that better basic data are needed on the extent and character of employer training.

Wenig & Wolansky (1983), in one of the National Center for Research in Vocational Education's Information Series, explained the effects of social

(demographic forces, changing values), political, technological, and economic changes in American society on employer-sponsored training in the past and in the present. It is an interpretive paper based on a review and synthesis of existing information, including survey results from 60 directors of technical training programs conducted in 1981 by one of the authors. The reasons for training by employers were to: help employees remain current with new technology, increase productivity, make the workplace safer, increase employee promotability, and reduce employee turnover. Wenig and Wolansky reported that the content of the training included orientation training, safety, on-the-job training, technical skills, speed and accuracy of job performance, management training, and general education. To be successful the employer-sponsored training program has to have strong support from top management and attractive incentives for participants. The authors argued that our society needs a structure to encourage improved linkages among government training programs, school and college based vocational programs, and private sector training programs.

In his book, The Missing Connection between Business and the Universities, Lynton (1984) presented findings from a synthesis of previous studies on employer-sponsored programs and his own data obtained through interviews and group meetings with people at universities, major employee training organizations, and companies that were concerned with employee training. He estimated the annual cost of employer-sponsored training at between $20 and $40 billion. Even though this is a considerable amount, he noted that employee training is still quite limited both in terms of the amount of instruction provided to any one employee and in terms of the percentage of participating employees. He found that the greatest portion of the training was intended for managers, supervisors, and professionals both in the number of hours and in cost, but in recent years the training has gradually broadened to include lower employment levels. The content of the training included: basic skills in communications and interpersonal relations; skills to respond to changes in technology, products, and regulation; and continuing education for managers and supervisors.

Lynton reasoned that it is more cost-effective for employers to "buy" rather than to "make" training courses when the courses are very similar to academic products if they are readily available. He argued that colleges and universities should make the courses more convenient to the clients in

terms of time, place, and format, which requires a number of profound changes in their procedures, methodologies, and relationships with industry. He emphasized the importance of greater involvement of higher education in employee education, not just for meeting employer needs but for its far-reaching impact on faculty isolation and improved professional education at postsecondary institutions.

The Carnegie Foundation for the Advancement of Teaching sponsored a study of education in American industry and business (Eurich, 1985). The study indicated that the rapid growth of corporate in-house education and the expansion of corporate colleges that give their own academic degrees pose a challenge to higher education. Even though some duplications may be inevitable, Eurich expressed concern that the duplications may become wasteful and that they imply inadequacies in the educational establishment or a lack of adequate cooperation between the private and public sectors. The study estimated that corporate education costs between $40 and $60 billion per year, and that about million workers received training each year. The content of the training included: basic skills instruction (remedial instruction in reading, arithmetic, and speaking); management and executive training (time management, effective listening, management by objectives); technical and scientific study; sales, service, and customer training; and general education for personal enrichment, orientation, and interpersonal relations.

The reasons noted by Eurich for corporate in-house education were: the need for compensatory education in both basic skills and at advanced professional levels; company oriented education provides for improved cooperation and communication and for corporate culture; in-house education opportunities help recruitment; and more flexibility in content, time, and method of presentation. The author pointed out that business and higher education collaboration is successful in rather specific areas that are congenial to the needs and abilities of both parties and that a comprehensive approach is needed that joins the strengths of collegiate and corporate education while respecting the different missions of the two systems.

In summary, the literature review reveals the following:

1. Employer-sponsored or employer-provided education and training is nothing new, but it is generally agreed that cooperation between business and higher education has recently become more critical because of rapidly

changing technology, real or perceived inadequacies of employees in basic skills, anticipated shortages of skilled workers as America experiences the effects of the aging of the baby-boom generation, and limited resources available for education and training in the United States.

2. In spite of increased interest among researchers and the journalistic attention given to the issue, little solid data are available concerning the scope and content of employer-sponsored education and training, especially data on the real cost of corporate education and the extent of content overlap between employer in-house education and courses offered by postsecondary institutions.

APPENDIX B

PARTICIPATING CALIFORNIA COMMUNITY COLLEGES

Coastline Community College, Fountain Valley

Cypress College, Cypress

De Anza College, Cupertino

Evergreen Valley College, San Jose

Foothill College, Los Altos Hills

Fullerton College, Fullerton

Gavilan College, Gilroy

Golden West College, Huntington Beach

Irvine Valley College, Irvine

Mission College, Santa Clara

Orange Coast College, Costa Mesa

Rancho Santiago College, Santa Ana

Saddleback College, Mission Viejo

San Jose City College, San Jose

West Valley College, Saratoga

APPENDIX C

A STUDY OF PRIVATE AND PUBLIC SECTOR VOCATIONAL TRAINING PROGRAMS IN CALIFORNIA

Community College Interview Schedule

We are conducting this study to compare vocational training activities of private industry and community colleges in selected areas of California. This study is being conducted for the California Community Colleges Statewide Occupational Education Advisory Committee for Research and Evaluation. Before we ask specific questions about your electronics technology and/or secretarial studies program, we need some general information about your college and the vocational education programs at your college.

1. College name:

2. Name of respondent (interviewee):

3. Interview date:

4. Total college enrollment (most recent figure available) [Duplicated count]:

5. Total occupational education enrollment (most recent figure available): [Duplicated count.]

6. What is your position (or title)?

Electronics Technology

We are interested in your Electronics and Electrical Technology Program, TOP code 0934. For your reference, the field is defined as study of the theory and application of electrical and electronic systems and their components including circuits, electromagnetic fields, energy sources, computers, and other electrical and electronic components and devices. Specific programs included are: Electronic Communication, Industrial Electronics, Radio/Television, Electrical Power, Electrical Distribution, Computer Electronics, Electron Microscope, Laser Technology, and Electrical Maintenance.

1. Do you offer any occupational education or vocational training programs in this field?

   ____Yes

   ____No

   [If "Yes," go on to the next question. Otherwise, go to the section on secretarial training on page 6.]

2. What specific programs do you offer? Please give the program titles and appropriate TOP codes.

3. What do you think are the reasons for private companies offering courses in electronics technology in-house, instead of or in addition to utilizing community college courses?

4. What do you think are the advantages to private companies of offering their own courses in this field in-house?

5. What do you think are the disadvantages to private companies of offering courses in this field in-house?

6a. How many courses did you offer in electronics and electrical technology during the past 12 months to meet the needs of a specific company through contractual education?

b. Do you have other involvement or cooperative efforts with private companies regarding their employee training in electronics and electrical technology?

7. What do you think community colleges should do in order to meet the electronics and electrical training needs of private industry?

8a. Do you think <u>private industry</u> is doing electronics and electrical technology training that community colleges could do better or more economically?

____Yes

____No

____Don't know

Comments:

b. [If "Yes":] What kind of training is it?

9. What courses do you offer in the field of electronics and electrical technology? [Obtain a list of descriptive titles of all courses or a reference to where they are in an available catalog.]

10. What are the purposes of the 0934 electronics and electrical technology program offered at your college? [Check all that apply.]

____Helping students for job entry

____Helping students for job maintenance

____Helping students for job advancement

____Other (specify:)

11. Approximately how many persons were enrolled in the 0934 electronics and electrical technology program during the past year?

____ [Unduplicated count preferred.]

____ [Duplicated count.]

12. Approximately how many instructional hours are required to complete the 0934 electronics technology program? [Obtain range as appropriate.]

13. What percentage of the courses that you offer in this field require work experience as part of the course?

____81 - 100%

____61 - 80%

____41 - 60%

____21 - 40%

____0 - 20%

14. What are the major instructional methods used? [Check all that apply.]

____Instructor lecture/lab

____Independent study, including programmed instruction

____Computer aided instruction

____Simulation or use of simulators

____Other (Specify:)

15. Do you have any other comments to make about your programs in electronic and electrical technology?

Secretarial Studies

We are interested in your secretarial studies program, TOP code 0514. For your reference, the field is defined as study designed with the main emphasis on secretarial skills and techniques. Specific programs included are: Legal, Medical, Court Reporting, Administrative, Clerical (including Office Practice), Typing, and Word Processing.

1. Do you offer any occupational education or vocational training programs in this field?

   ____Yes
   ____No

   [If "Yes", go on to the next question. Otherwise, stop here, and terminate the interview.]

2. What specific programs do you offer? Please give the program titles and appropriate TOP codes.

3. What do you think are the reasons for private companies offering courses in secretarial studies in-house, instead of or in addition to utilizing community college courses?

4. What do you think are the advantages to private companies of offering their own courses in this field in-house?

5. What do you think are the disadvantages to private companies of offering courses in this field in-house?

6a. How many courses did you offer in secretarial studies during the past 12 months to meet the needs of a specific company through contractual education?

b. Do you have other involvement or cooperative efforts with private companies regarding their employee secretarial training?

7. What do you think community colleges should do in order to meet the secretarial studies training needs of private industry?

8a. Do you think private industry is doing secretarial studies training that community colleges could do better or more economically?

____Yes

____No

____Don't know

Comments:

b. [If "Yes":] What kind of training is it?

9. What courses do you offer in the field of secretarial studies? [Obtain a list of descriptive titles of all courses or a reference to where they are in an available catalog.]

10. What are the purposes of the 0514 secretarial studies program offered at your college? [Check all that apply.]

____Helping students for job entry

____Helping students for job maintenance

____Helping student for job advancement

____Other (specify:)

11. Approximately how many persons were enrolled in the 0514 secretarial studies program during the past year?

____ [Unduplicated count preferred.]

____ [Duplicated count.]

12. Approximately how many instructional hours are required to complete the 0514 secretarial studies program? [Obtain range as appropriate.]

13. What percentage of the courses that you offer in this field require work experience as part of the course?

____81 - 100%

____61 - 80%

____41 - 60%

____21 - 40%

____0 - 20%

14. What are the major instructional methods used? [Check all that apply.]

____Instructor lecture/lab

____Independent study, including programmed instruction

____Computer aided instruction

____Simulation or use of simulators

____Other (Specify:)

15. Do you have any other comments about your programs in secretarial studies?

APPENDIX D

A STUDY OF PRIVATE AND PUBLIC SECTOR VOCATIONAL TRAINING PROGRAMS IN CALIFORNIA

Private Sector Interview Schedule

We are conducting this study to compare vocational training activities of private industry and community colleges in selected areas of California. This study is being conducted for the California Community Colleges Statewide Occupational Education Advisory Committee for Research and Evaluation. Before we ask specific questions about your electronics technology and/or secretarial training programs, we need some general information about your company, the training program under your supervision, and your responsibilities.

1. Company name:

2. Name of respondent (interviewee):

3. Interview date:

4. Number of employees: [at this location or division.]

5. Type of business:

6. What is your position (or title)?

7. Please briefly describe your role and responsibilities.

8. How is the training program under your supervision organized in terms of the training staff, fields of training, and locations of training?

   a. Training staff size and organization:

   b. Fields of training offered under your supervision:

   c. Locations of training sites:

Electronics Technology

We are interested in your in-house training in the field of electronics technology. You may interpret the term "electronics technology" as whatever it means to you. For your reference, community colleges define the field as study of the theory and application of electrical and electronic systems and their components including circuits, electromagnetic fields, energy sources, computers, and other electrical and electronic components and devices. Specific programs included are: Electronic Communication, Industrial Electronics, Radio/Television, Electrical Power, Electrical Distribution, Computer Electronics, Electron Microscope, Laser Technology, and Electrical Maintenance.

1. Do you offer in-house training in this field other than on-the-job training?

   ____ Yes

   ____ No

   [If "Yes," go on to the next question. Otherwise, go to the section on secretarial training on page 8.]

2. Do you provide formal training in this field, that is, training organized into courses or topics for which there are written course outlines or objectives?

   ____ Yes

   ____ No

   Comments:

   [If formal training is offered, go on to the next question. Otherwise, go to the section on secretarial training on page 8.]

3. What are the reasons your company offers courses in electronics technology in-house, instead of or in addition to using public sector courses?

4. What are the advantages of offering courses in this field in-house?

5. What are the disadvantages of offering courses in this field in-house?

6a. In addition to your own in-house courses in electronics technology, do you utilize courses offered by outside training providers or public sector institutions?

____ Yes

____ No

b. [If "Yes":] Who offers these courses you are utilizing? [List names or types of providers or institutions.]

c. [If a community college is not mentioned:] Did you consider community colleges as an alternative to your own in-house training in electronics technology?

____ Yes

____ No

Comments:

7. Are you generally familiar with electronics technology courses offered at local community colleges?

____ Yes

____ No

Comments:

8. What do you think community colleges should do in order to meet the electronic technology training needs of your company?

9a. Do you think community colleges are doing electronics technology training that private industry could do better or more economically?

____Yes

____No

____Don't know

Comment:

b. [If "Yes":] What kind of training is it?

10. What courses do you offer in-house in the field of electronics technology? [Obtain a list of descriptive titles of all courses. If no descriptive course titles are available, obtain a list of skills or training objectives.]

11. What are the purposes of the in-house training in electronics technology? [Check all that apply.]

____Helping employees for job entry

____Helping employees for job maintenance

____Helping employees for job advancement

____Other (specify:)

12. Approximately how many persons were trained in this field <u>in-house</u> during the past 12-month period?

____ [Unduplicated count preferred.]

____ [Duplicated count.]

13. Approximately how many instructional hours does a typical trainee spend in in-house electronics technology courses? [Also indicate time interval.] [Obtain range as appropriate.]

14. In your judgement,about what percentage of the course enrollees took the course(s) on a voluntary basis, and what percentage took them because they were required or recommended? [Original categories were 20% intervals.]

____% Voluntary

____% Recommended

____% Required

15. Are the courses you offer in this field open to people other than your own employees?

____Yes

____No

____Other response (Specify:)

Comments:

16. What percentage of the courses that you offer in this field require on-the-job training as part of the course?

____81 - 100%

____61 - 80%

____41 - 60%

____21 - 40%

____0 - 20%

17. Do the employees have to travel to places other than their workplace to get the training?

____Yes

____No

Comments:

18. What are the major instructional methods used? [Check all that apply.]

____Instructor lecture/lab

____Independent study, including programmed instruction

____Computer aided instruction

____Simulation or use of simulators

____Other (Specify:)

19. Who delivers the instruction for the in-house training in electronics technology? [Check both if applicable.]

____Company staff

____Other than company staff (Specify:)

Comments:

20. What percentage of the courses in this field require specialized equipment/facilities which cannot be made available outside your company?

____81 - 100%

____61 - 80%

____41 - 60%

____21 - 40%

____0 - 20%

21. Do the employees take the courses in this field on company time?

____Yes, on company time during their regular working hours.

____Yes, on company time, but other than their regular working hours.

____No, they take courses on their own time.

22a. Does your company keep track of the cost of in-house training in electronics technology?

____Yes

____No [Skip to question 23]

b. [If "Yes" to question 22a:] Does the training cost as you compute it include the trainee's salary and benefits?

____Yes

____No

Comments:

c. [If "Yes" to question 22a:] To what division/department is the training cost charged?

____The training division/department

____The trainee's division/department

Comments:

23. Is cost an important factor in deciding whether an electronics technology course is offered in-house or whether a course offered by a community college is utilized?

____Yes

____No

Comments:

24. Do you have any other comments to make about your training in electronics technology?

Secretarial Training

We are interested in your in-house training in the field of secretarial training. You may interpret the term "secretarial training" as whatever it means to you. For your reference, community colleges define the field as training designed with main emphasis on secretarial skills and techniques. Specific programs included are: Legal, Medical, Court Reporting, Administrative, Clerical (including Office Practice), Typing, and Word Processing.

1a. Do you offer in-house training in this field other than on-the-job training?

____Yes [Continue with question 2.]

____No

b. [If "No"] Why not?

[If "No" to question 1a, stop here and terminate the interview.]

2. Do you provide formal secretarial training, that is, training organized into courses or topics for which there are written course outlines or objectives?

____Yes

____No

Comments:

[If formal training is offered, go on to the next question. Otherwise, stop here, and terminate the interview.]

3. What are the reasons your company offers courses in secretarial training in-house, instead of or in addition to using public sector courses?

4. What are the advantages of offering courses in this field in-house?

5. What are the disadvantages of offering courses in this field in-house?

6a. In addition to your own in-house courses in secretarial training, do you utilize courses offered by outside training providers or public sector institutions?

____Yes

____No

b. [If "Yes":] Who offers these courses you are utilizing? [List names or types of providers or institutions.]

c. [If a community college is not mentioned:] Did you consider community colleges as an alternative to your own in-house secretarial training?

____ Yes

____ No

Comments:

7. Are you generally familiar with secretarial training courses offered at local community colleges?

____ Yes

____ No

Comments:

8. What do you think community colleges should do in order to meet the secretarial training needs of your company?

9a. Do you think community colleges are doing secretarial training that private industry could do better or more economically?

____Yes

____No

____Don't know

Comment:

b. [If "Yes":] What kind of training is it?

10. What courses do you offer in-house in the field of secretarial training? [Obtain a list of descriptive titles of all courses. If no descriptive course titles are available, obtain a list of skills or training objectives.]

11. What are the purposes of the in-house secretarial training? [Check all that apply.]

____Helping employees for job entry

____Helping employees for job maintenance

____Helping employees for job advancement

____Other (specify:)

12. About how many persons were trained in this field <u>in-house</u> during the past 12-month period?

____ [Unduplicated count preferred.]

____ [Duplicated count.]

13. About how many instructional hours does a typical trainee spend in in-house secretarial training courses? [Also indicate time interval.] [Obtain range as appropriate.]

14. In your judgement, about what percentage of the course enrollees took the course(s) on a voluntary basis and what percentage took them because they were required or recommended? [Original categories were 20% intervals.]

____% Voluntary

____% Recommended

____% Required

15. Are the courses you offer in this field open to people other than your own employees?

____Yes

____No

____Other response (Specify:)

Comments:

16. What percentage of the courses that you offer in this field require on-the-job training as part of the course?

____81 - 100%

____61 - 80%

____41 - 60%

____21 - 40%

____ 0 - 20%

17. Do the employees have to travel to places other than their workplace to get the training?

____Yes

____No

____Comments:

18. What are the major instructional methods used? [Check all that apply.]

____instructor lecture/lab

____Independent study, including programmed instruction

____Computer aided instruction

____Simulation or use of simulators

____Other (Specify:)

19. Who delivers the instruction for the in-house training in secretarial skills? [Check both if applicable.]

____Company staff

____Other than company staff (Specify:)

Comments:

20. What percentage of the courses in this field require specialized equipment/facilities which cannot be made available outside your company?

____81 - 100%

____61 - 80%

____41 - 60%

____21 - 40%

____0 - 20%

21. Do the employees take the courses in this field on company time?

____Yes, on company time during their regular working hours.

____Yes, on company time, but other than their regular working hours.

____No, they take courses on their own time.

22a. Does your company keep track of the cost of in-house training in secretarial training?

____Yes

____No [Skip to question 23]

b. [If "Yes" to question 22a:] Does the training cost as you compute it include the trainee's salary and benefits?

____Yes

____No

Comments:

c. [If "Yes" to question 22a:] To what division/department is the training cost charged?

____The training division/department

____The trainee's division/department

Comments:

23. Is cost an important factor in deciding whether a secretarial training course is offered in-house or whether a course offered by a community college is utilized?

____Yes

____No

Comments:

24. Do you have any other comments to make about your secretarial training?

APPENDIX E

PARTICIPATING COMPANIES

Advanced Micro Devices, Sunnyvale

Apple University, Cupertino

Coherent, Inc., Palo Alto

Convergent Technologies, San Jose

CPI Pension Services, Inc., Irvine

Datapower, Inc., Santa Ana

Disney University, Anaheim

Fluor Daniel, Irvine

FMC Corporation Ordnance Division, Santa Clara

Hewlett Packard Stanford Park Division, Palo Alto

Hughes Industrial Electronics Group, Newport Beach

IBM General Products Division, San Jose

Lockheed Missiles and Space Company, Inc., Sunnyvale

McDonnell Douglas Aerospace Information Services Company, Cypress

National Semiconductor Corporation, Santa Clara

Northrop Electro-Mechanical Division, Anaheim

Pacific Bell, Tustin

Rockwell International Autonetics Division, Anaheim

Rockwell International Space Transport Systems Division, Downey

Sears, Santa Fe Springs

State Farm Insurance Companies, Costa Mesa

Teledyne Microwave Electronics Company, Mountain View

Watkins-Johnson Company, Palo Alto

Wells Fargo Bank, San Francisco